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## MANAGEMENT OF ADVANCED APPENDICITIS IN CHILDHOOD

### WITH OBSERVATIONS ON BLOOD CONCENTRATION DUE TO PERITONITIS


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The unfortunate controversy over the relative merits of immediate and delayed operation for advanced appendicitis can be settled only by results obtained with one or the other method of treatment. Reports on these results will be misleading if they cover cases not really advanced, for these will decrease the relative number of deaths following either method of treatment. Reports in which the cases are vaguely described as "late" or "with spreading peritonitis" are not convincing. The mere diagnosis of appendicitis, especially in a child, is often difficult, and the diagnosis before operation of the actual stage of the disease is usually impossible. The duration of the disease is no measure of its gravity, nor are the laboratory observations. The discoveries made by physical examination, especially of children, are hard to interpret. Even at operation the surgeon cannot estimate the extent of the peritonitis without, as Ladd says, "he does a very improper operation." We contend that the only indisputable proof of late appendicitis is the condition of the appendix. We have therefore classified as cases of late involvement only those in which there is gangrene plus perforation of the appendix.

In preparing this report we have studied the clinical record of every patient. It covers 656 consecutive cases of appendicitis under treatment in the last seven years in children under 16 years of age. We have divided the cases into three groups:

A. Cases without gangrene or suppuration, 357 cases, no deaths.

B. Cases with gangrene or suppuration but without perforation or with early perforation, 164 cases, no deaths. (In seventeen of these cases no drainage was used, although early perforation was found.) Many patients in this group had the same physical signs and laboratory observations and were apparently just as ill as many patients in group C.

C. Cases with gangrene and perforation or with perforation and abscess, 135 cases, four deaths, 2.9 per cent mortality.

We shall confine our consideration to the 135 cases of group C.

The practice at the Indiana University Clinic has always been to operate immediately for acute appendicitis, regardless of the day of the disease and without too much regard for how ill the patient may seem on admission. By immediate operation we do not mean operation without a complete study and preparation of the patient, which may require several hours. The average time between admission and operation for the cases reported was four and one-half hours. Our preparation for operation consists of continuous gastric lavage to relieve tympanites as much as possible, of the injection by vein of physiologic solution of sodium chloride containing 5 per cent dextrose, and in some cases transfusions of blood. Our observation has been that most children in desperate condition on admission are so improved by this treatment that they are able to undergo operation with entire safety. None of our patients died on the table.

Immediate operation was performed on 119 patients of group C and delayed operation for one cause or another on the remaining sixteen patients. Except for this, all patients received the same treatment. The accompanying tables give pertinent statistical data on these cases.

We shall discuss first the 119 cases in which immediate operation was done. That these were really "late" is shown by the following facts:

1. The pathologist found gangrene and perforation of the appendix in 112 of the cases. In the remaining seven cases an abscess was drained without removal of the appendix. No case in which drainage was not done was included in this group. Our practice is not to use drainage except when an abscess or a considerable infected and necrotic tissue which cannot be removed is present. We do not employ it when the appendix is found perforated if there is no well marked extra-appendical infection.

2. The average time before admission was three days. This is regarded by some writers as the most dangerous time to operate. That we cannot judge the condition of the appendix by the duration of the illness is shown by the observation in ten cases of perforation within twelve hours after onset of symptoms, and in one case within six hours.

In the group of 119 patients on whom immediate operation was done there was one death, a mortality of 0.83 per cent. The child who died survived the operation ninety-four days and was found at autopsy to have general septicemia and ulcerative endocarditis. We attribute this extremely low death rate to the operative technic and to the postoperative treatment, which included care by experienced nurses, constant vigilance to detect complications, and the free use of blood transfusions.

### THE OPERATIVE TECHNIC

1. The operations were done by fifteen surgeons of the resident and visiting staffs. All of them had considerable experience in operating for advanced appen-

A study of 135 consecutive cases treated at the James Whitcomb Riley Hospital for Children.

dicitis and all used practically the same technic. A proper operation is the most important element in the treatment. It is often hard to do, requires expert assistance and should not be attempted by any but a well trained surgeon.

The following is a summary description of the operative technic used on these patients:

McBurney's incision. Adequate exposure of the operative field with Halsted's appendix retractors and flexible ribbon retractors. Gauze used sparingly and only to facilitate exposure, not to wall off the infected area. Location of appendix and

TABLE 1.—*Total Number of Cases in Groups A, B and C and in Subgroups $C_1$ and $C_2$*

| Group | | Number of Cases | Percentage Mortality |
|---|---|---|---|
| A | Number with gangrene or suppuration | 357 | 0.00 |
| B | Gangrene or suppuration without or with only early perforation | 164 | 0.00 |
| C | Gangrene and perforation or perforation and abscess, total | 135 | 2.96 |
| $C_1$ | Gangrene and perforation or perforation and abscess, immediate operation | 119 | 0.84 |
| $C_2$ | Gangrene and perforation or perforation and abscess, delayed operation | 16 | 18.7 |

| | | |
|---|---|---|
| A, B, C | —Four deaths | 0.609 |
| B, C | —Four deaths | 1.33 |
| C | —Four deaths | 2.96 |
| $C_1$ | —One death | 0.84 |
| $C_2$ | —Three deaths | 18.7 |

evacuation of abscess by suction and gentle sponging. Removal of the appendix, if possible. (It was removed in all but seven of the 119 cases. We believe that this does not, in most cases, materially increase the danger of the operation, while it prevents difficult and often dangerous secondary operations and various complications of recovery.) Ligation of the appendix stump and invagination with a suture of fine catgut, unless the cecum is too friable to permit suturing; in that event, ligation only. Exploration of the pelvis and the lumbar gutter for pus or contaminated fluid. Insertion as indicated of Penrose tubes without gauze, into pelvis and lumbar gutter or as a coffer dam around the head of the cecum. Interposition, if possible, of the great omentum between the drains and the intestine. Loose closure of the wound in the abdominal wall.

We are convinced that a successful outcome in these advanced cases demands the use of abundant drainage. The practice of limiting drainage has been carried too far. It is not necessary to drain a merely contaminated area of peritoneum, but an infected area, especially one enclosing an abscess, must be thoroughly drained and the drains allowed to remain for from seven to nine days, until a good sinus is established. To drain an appendical abscess with one or two cigaret drains which are removed in twenty-four hours is to invite disaster.

In the operation just described, but little intestine except the cecum is exposed or even seen. Infected material is not spread over healthy peritoneal surfaces. The omentum prevents dangerous adhesions and limits the spread of infection.

*Postoperative Treatment.*—Recognition of Hypoproteinemia: All these children had continuous gastric suction started immediately after operation and continued until regurgitation of bowel contents had ceased. Care was used to prevent the tube from causing postnasal infection and laryngeal necrosis. In every case a nurse on constant duty kept the tube open and the suction always in action. Codeine and morphine were practically the only drugs used. We regard the method of controlling the body fluids as the most important part of the postoperative treatment and therefore proceed to discuss its rational basis in some detail. What we here state is a preliminary report on some studies on the effects of peritonitis on the blood.

Peritonitis must be the ultimate cause of the changes in the quantity, composition and movements of the body fluids observed in patients with appendicitis. We once thought that these changes were due chiefly to a loss of water and electrolytes by vomiting. We now believe that peritonitis causes other and much more dangerous effects on the body fluids by robbing the blood of its proteins. It is well known that, when damaged by inflammation, the capillary endothelium permits the escape of these substances from the blood stream. It is easily conceivable that in extensive peritonitis the blood may lose enough protein to deprive it of the osmotic pressure necessary to absorb water from the tissues. In this event concentration of the blood and edema of the tissues would occur.

Observation of the beneficial effects of blood transfusion on children with peritonitis led us to adopt the conception just stated. Our use of blood transfusions was purely empirical for a long time. We did not understand their real action till we began to study the effects of cutaneous burns on the blood. Then we chanced to observe in two patients with general peritonitis due to perforation of the colon by cancer the identical blood picture caused by burns, namely hemoconcentration and a great decrease in blood proteins. It can readily be produced by aseptic peritonitis in the experimental animal. The clinical symptoms of extreme blood concentration are startling cyanosis, euphoria, tachycardia, low blood pressure, generalized edema and bubbling rales throughout the lungs. Onset of the trouble is disclosed by slight edema and a little cyanosis. The peritoneum has about the same area as the skin. Just as a total cutaneous burn is always fatal so is a general peritonitis, and from the same cause and with the same symptoms. We do not deny that peritonitis causes a

TABLE 2.—*Time Analysis, Groups $C_1$ and $C_2$*

| | | |
|---|---|---|
| Onset of Disease Till Admission | | |
| Shortest time | 6 | hours |
| Longest time | 21 | days |
| Average time | 3.7 | days |
| Average Number of Hospital Days | | |
| Group $C_1$, cases without intra-abdominal complications | 21.7 | days |
| Group $C_1$, cases with intra-abdominal complications | 36.9 | days |
| Group $C_1$, average | 26.6 | days |
| Group $C_2$, average | 35.9 | days |

Ten cases in group C, appendix found perforated within twelve hours of onset of disease.

Average elapsed time in group C from admission till operation, 4.25 hours.

true toxemia, but we have come to regard this as a secondary cause of the symptoms. It is always well to remember that inflammation favors exudation and not absorption.

It follows from the foregoing that the injudicious administration of water to a patient with widespread peritonitis is dangerous. It dilutes the blood proteins and washes them out of the damaged capillaries of the inflamed peritoneum.

The bad effects of even mild degrees of hypoproteinemia are well known. It deranges the metabolism of the entire body by preventing orderly exchange of

materials between the blood and the tissue cells. It favors the spread of peritonitis because it devitalizes the tissues.

We are convinced that without the free use of blood transfusions many of the desperately ill children in this series would have died, and we strongly advise that in every case of peritonitis the blood proteins be kept above the critical level at which edema develops.

## REPORT OF CASES

The following are reports on three patients in the group treated by immediate operation: one on the patient who died, and two on patients who developed serious complications.

TABLE 3.—*Complications in Group Operated on Immediately, Group $C_3$*

| | |
|---|---|
| Total number of cases | 119 |
| Appendectomy with drainage | 112 |
| Drainage only | 7 |
| Pelvic abscess | 13 |
| Fecal fistula | 4 |
| Subdiaphragm abscess | 3 |
| Septicemia | 1 |
| Bacterial endocarditis | 1 |
| Bronchopneumonia | 3 |
| Empyema | 2 |

CASE 1.—R. R., aged 15 years, was admitted to the hospital four days after onset of symptoms. The lower part of the abdomen was rigid and tender to palpation. No masses were palpable. Bowel sounds were present. A thrill was palpable over the mitral area.

The temperature was 99.6 F., pulse 140 and respiratory rate 34. The hemoglobin content was 14 Gm., red blood cells numbered 4,690,000 and white blood cells 20,700 with 22 per cent immature and 64 per cent adult cells. Analysis of the urine showed hyaline casts and from 8 to 10 pus cells.

An appendectomy was done with drainage one and one-fourth hours after admission. Postoperative therapy consisted in the use of oxygen, intravenous fluids, continuous gastric lavage and two blood transfusions of 350 cc. each. The temperature ranged from 99 to 100 F. for fifteen days. A right subphrenic abscess was drained on the twenty-sixth hospital day. The course was very satisfactory until the ninety-third day, when there was a sharp rise in the temperature and the child became comatose. Death occurred on the ninety-fourth day.

Autopsy showed a right subphrenic abscess "secondary to acute appendicitis with perforation, bacteremia (Streptococcus haemolyticus) and rheumatic valvulitis, healing with insufficiency on which was superimposed acute bacterial mitral endocarditis.

CASE 2.—W. H., aged 8 years, was admitted to the hospital seven days after onset of symptoms. The abdomen was rigid, tender to palpation, moderately distended and tympanitic to percussion. Bowel sounds were absent. No masses were palpable.

The temperature was 101 F., pulse 130 and respiratory rate 32. Examination of the blood showed hemoglobin content 15 Gm., red cells 5,910,000 and white cells 35,800 with 73 per cent immature and 26 per cent adult cells. Analysis of the urine showed many casts and from 5 to 10 pus cells.

The patient was given 1,000 cc. of physiologic solution of sodium chloride with dextrose intravenously. Appendectomy with drainage was done two hours after admission. Postoperative treatment consisted in the use of intravenous fluids with dextrose, continuous gastric lavage, oxygen, codeine and three blood transfusions. An abscess in the right lower quadrant was drained through the original McBurney incision on the forty-sixth day. A pelvic abscess on the left side was drained through a left McBurney incision on the sixtieth day. A fecal fistula developed. The patient was discharged from the hospital on the one hundred and twenty-first day.

The pathologist's diagnosis was acute diffuse suppurative appendicitis, peritonitis and fecalith of the appendix.

The patient was readmitted one year later, at which time a fecal fistula was successfully repaired.

CASE 3.—M. S., aged 11 years, was admitted to the hospital four days after onset of symptoms. The abdomen was moderately distended, with generalized rigidity and tenderness. Bowel sounds were absent. No masses were palpable.

The temperature was 100.4 F., pulse 120 and respiratory rate 22. Examination of the blood showed hemoglobin content 15 Gm., red cells 5,060,000 and white cells 21,450 with 13 per cent immature and 79 per cent adult cells.

An appendectomy was done with drainage one hour after admission. Postoperative therapy consisted in the administration of codeine, oxygen, intravenous fluids, continuous gastric lavage and blood transfusions.

A subphrenic abscess on the right was drained on the forty-fourth day. Resection of a rib and drainage of an empyema cavity on the right was done on the seventy-fifth day.

The pathologist's diagnosis was acute diffuse suppurative appendicitis, possibly due to an appendical obstruction.

The patient was discharged as well on the ninety-fourth hospital day.

Sixteen patients with advanced attacks were treated without immediate operation; in this group there were three deaths, a mortality of 18.7 per cent.

Advocates of delayed operation may contend that to contrast this appalling death rate with the low death rate of the series treated by immediate operation is unfair, because operation was probably delayed on the more desperately ill patients. We fortunately have full clinical data on all sixteen patients treated conservatively and full autopsy reports on the three who died.

CASE 1.—A white girl aged 6 years had onset of symptoms five days prior to admission. The pharynx was injected, the chest clear, the abdomen distended, everywhere tympanitic and tender on pressure. There was no muscle defense. Borborygmi were present.

The temperature was 99.4 F., pulse 130 and respiratory rate 30. Red blood cells numbered 5,110,000, white blood cells 13,500 with 63 per cent adult and 18 per cent immature cells. X-ray examination showed the chest to be clear.

Treatment consisted of continuous gastric lavage, intravenous salt and dextrose solution, oxygen therapy in a chamber, three blood transfusions and codeine. The temperature rose sharply on the second hospital day and from this time the child got steadily worse. Cyanosis was noted on the third hospital day with death on the fifth hospital day when the temperature was 106.5 F.

TABLE 4.—*Complications in Group with Delayed Operation, Group $C_4$*

| | |
|---|---|
| Total number of cases | 16 |
| Appendectomy with drainage | 13 |
| No operation | 3 |
| Subdiaphragmatic abscess | 2 |
| Persistent sinus | 2 |
| Empyema | 2 |
| Bowel obstruction | 1 |
| Pelvic abscess | 1 |
| Bronchopneumonia | 1 |

Autopsy showed acute appendicitis with perforation, generalized; fibrinopurulent peritonitis with mixed infection and bilateral hypostatic bronchopneumonia.

The sharp elevation of temperature that occurred the day after admission along with a marked change for the worse in the child's condition suggest a spread of infection which might have been averted by operation.

CASE 2.—A white boy aged 12 years had onset of symptoms four days before admission. Diminished breath sounds and rales were present. There was limited excursion of the lower right

side of the chest. The abdomen was distended and rigid, with generalized tenderness most marked in the right lower quadrant. Bowel sounds were not heard.

The temperature was 104.6 F., respiratory rate 30, pulse 120. Red blood cells numbered 5,430,000 and white blood cells 4,100 with 55 per cent adult and 3 per cent immature cells. The urine was normal and blood culture negative.

Treatment consisted of oxygen, continuous gastric lavage, intravenous salt solution with dextrose and three blood transfusions of 250 cc. each. The child showed temporary improvement on the second and third days when his temperature fell to 103 F. After this his course was downward, with deepening cyanosis and increasing temperature. Death occurred on the fifth day of circulatory collapse.

Autopsy showed strangulation and perforation of the appendix due to torsion and fibrinopurulent peritonitis.

Might not operation done on the second hospital day have prevented a spread of the peritonitis?

CASE 3.—A white girl aged 7 years had onset of symptoms seven days before admission. There were diminished breath sounds and rales over the right lower lung field. The abdomen was distended, rigid and tender to palpation. There was no localization of tenderness. Bowel sounds were absent.

The temperature was 100.8 F., respiratory rate 40 and pulse 120. Red blood cells numbered 4,090,000 and white blood cells 25,600 with 46 per cent adult and 47 per cent immature cells.

The temperature was between 101 and 104 F. for ten days. One hundred and fifty cc. of pus was aspirated from the left pleural cavity on the fourth hospital day. A mass could be palpated in the pelvis on the eighth day of hospitalization.

Therapy consisted in the use of oxygen, constant gastric lavage, intravenous salt solution and dextrose and two blood transfusions. Death occurred on the eleventh hospital day with a temperature of 107 F.

Autopsy showed acute gangrenous appendicitis with perforation, acute generalized peritonitis, a left subphrenic abscess and empyema on the left.

In this case the abdominal symptoms were attributed to pneumonia on admission. It was not until after several days that the nature of the abdominal trouble was diagnosed. It was the opinion of both the pediatricians and the surgeons who saw this patient that death could probably have been averted by operation shortly after admission.

### COMMENT

The patients in the delayed group who recovered were in no worse condition on admission than was the average patient in the group operated on immediately. They had more complications and a longer hospital stay. There is no reason to believe that they would not have recovered if they had been operated on immediately. Could the three deaths have been prevented by operation? This, of course, cannot be answered, but it is certain that the result of operation would not have been worse than that of conservative treatment. There is also a strong possibility that it might have stopped a fatal spread of peritonitis. The question here raised is really the only fundamental one in the dispute on the relative merits of early and delayed operation.

### THE EXTENT AND SPREAD OF PERITONITIS IN ADVANCED APPENDICITIS

Fortunately widespread, not to mention general, peritonitis is not so common in advanced appendicitis as many writers suppose. A careful study of the clinical histories of the 119 cases of advanced appendicitis treated by immediate operation shows that none of them had general peritonitis. One may safely assume that general pyogenic peritonitis, except in some cases of the idiopathic variety, is always fatal. One hundred and eighteen of these patients recovered. Autopsy on the one patient who died showed no general peritonitis. Thirteen of the sixteen patients treated by delayed operation recovered and three died with general peritonitis, shown by autopsy. Thus, general peritonitis occurred in only three of the 135 cases of perforation of the appendix.

This study has confirmed our faith in the power of the peritoneum to wall off infection and to prevent the passage of bacteria and toxins into the circulation. Abundant experimental evidence also supports this conviction. General peritonitis occurs only when the peritoneum is surprised by a sudden and immense contamination, as from perforation of the bowel. In appendicitis it nearly always has time to defend itself against a spread of infection, but this defense is occasionally overwhelmed. We have observed this in the presence of one or the other of the following conditions:

1. When a fecalith, impacted at the ceco-appendical junction, causes perforation by pressure necrosis. In this event the bowel contents may be poured directly into the peritoneal cavity.

2. When there is a rupture of peritoneal adhesions around a tense abscess.

Immediate operation is the only possible means of preventing these catastrophes.

### SUMMARY AND CONCLUSIONS

There is no reason for the belief that immediate operation for appendicitis, if properly done, spreads infection. On the contrary, the results here reported show that it is the only means of preventing the extension of peritonitis in the more advanced forms of the disease. General peritonitis occurred in only three of the 135 cases of perforation of the appendix, and operation was done in none of these three cases.

There is no doubt that the peritoneum puts up a defense against appendicitis which is in most cases able to overcome the infection or to confine it in the form of an abscess. In either of these events the result of delayed operation will be satisfactory, though it will prolong the period of illness and increase the number and severity of the complications. In case, however, the appendicitis is of one of the dangerous types described, the result of delay will be disastrous. There is no method except operation by which the presence of these progressive forms of the disease can be recognized. Furthermore, since many cases without perforation present the same symptoms as cases with perforation, it is evident that delay of operation will increase the number of perforations and, therefore, the number of deaths.

We have presented evidence for the belief that symptoms of peritonitis attributed to "toxemia" are in great part due to the loss of proteins by the blood and are of the opinion that the low death rate of this group of cases is due to a great extent to the free use of blood transfusions.

Our results do not support the common opinion that appendicitis is more dangerous in childhood than in adult life. Since the diagnosis in childhood is more difficult, it is probable that the disease is usually more advanced at the time of operation. Given a healthy child and a healthy adult both with appendicitis in the same stage and with identical treatment, we believe that the outlook for the child is about the same as that for the adult.

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# TREATMENT OF ACUTE SPREADING PERITONITIS FOLLOWING RUPTURED APPENDIX

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In predicting what would happen in the year 1939, Bowers once asserted, 20,000 persons will die of appendicitis at an average age of 27, their most productive period. Fewer than 2,000 will die of appendicitis, but 17,000 will die of peritonitis arising therefrom. Of the 300,000 who will be operated on for unruptured appendicitis, approximately only 1 per cent will die. Of 105,000 persons who will have peritonitis, one out of every six will die; 42,000 will have spreading peritonitis and more than 15,000, or one in three, will die. Over 80 per cent of those who die will die of spreading peritonitis. This situation constitutes a real challenge to the surgeon.

Fitz says "Appendicitis, in spite of being a fashionable and well studied disease for more than fifty years, continues to slap our faces insultingly." Surgeons have encountered a gradually diminishing number of patients with spreading peritonitis, but in the last four years the mortality has not been materially reduced. W. H. Hutchens Jr. calls attention to the fact that, of every twenty children who die, one dies of acute appendicitis. In 1913 the death rate from appendicitis per hundred thousand of population was 6.4 and in 1936 it was 17. In one metropolis 23.5 per hundred thousand perished.

The three great factors in reducing the terrific mortality are, first, the prevention of the administration of laxatives in abdominal pain; second, the early hospitalization of patients suffering with appendicitis; third, the reduction of the mortality from spreading peritonitis. Of 481 patients who had taken laxatives, 477 died as a result of spreading peritonitis. If a patient has taken more than one laxative, he has only one chance in seven to recover. In other words, of those who did receive laxatives one out of fourteen died, and of those who did not receive laxatives only one out of 122 died (Bowers). Patients often commit the error of sending for the castor oil bottle instead of sending for the doctor.

In a hospital in Philadelphia one surgeon had a mortality rate of 20 per cent and another a mortality rate of 3.3 per cent. The mortality from appendicitis decreases with the experience of the surgeon (Bowers).

Sydenham, in the seventeenth century, made the statement that at the commencement of "iliac passion," as appendicitis was then called, the pain was not fixed but that later it settled in one spot and remained there.

The great desideratum is not to treat peritonitis but to prevent it by early operation.

Giertz reduced the mortality rate in purulent peritonitis and operated on from 22.22 to 3.5 per cent of the patients within forty-eight hours. This he accomplished by changing his entire principle of operating, employing small incisions, no unnecessary interference in the abdomen, and primary closure in early cases, as a rule nearly all in the first forty-eight hours. Even with ileus he departed from his early active measures and depended more on expectant than on active treatment.

Poole reported 757 cases of acute appendicitis with a mortality of forty-eight cases of generalized peritonitis, or 54.15 per cent, whereas with the localized abscesses there was a mortality rate of only 9.37 per cent. He believed that patients in whom abscesses are allowed to develop have a much better prognosis than those operated on during spreading generalized peritonitis. In many, nature will ultimately reduce the surgery indicated to a simple incision and drainage of a localized abscess, which sometimes points into the culdesac and should be opened through the vagina or occasionally the rectum. A patulous anus and hydrorrhea indicate pressure on the rectum prior to perforation.

Le Grand Guerry, who for many years has consistently practiced the deferred operation in delayed cases, cites ninety-four cases of acute gangrenous ruptured appendicitis presenting diffuse peritonitis in which immediate operation was done, with ten deaths, a mortality rate of 10.64 per cent. In contrast, there were 139 cases of acute gangrenous ruptured appendicitis presenting diffuse peritonitis in which treatment was deferred operation with only two deaths, a mortality rate of 1.43 per cent.

TABLE 1.—*Appendicitis in Philadelphia Hospitals*

| | |
|---|---|
| Of patients admitted in 24 hours, 1 in | 46 died |
| Of patients admitted in 48 hours, 1 in | 21 died |
| Of patients admitted in 72 hours, 1 in | 10 died |
| If purgative was given | 1 in 14 died |
| If no purgative was given | 1 in 115 died |

TABLE 2.—*Mortality Rates at Vanderbilt Hospital; Classification According to the Stage of the Disease*

| | Number of Cases | Number of Deaths | Mortality, per Cent |
|---|---|---|---|
| Acute appendicitis | 686 | 1 | 0.145 |
| Appendical abscess | 119 | 5 | 4.2 |
| Localized peritonitis | 87 | 7 | 8.1 |
| Spreading or generalized peritonitis | 105 | 58 | 55.9 |

By spreading peritonitis we mean cases in which the inflammatory process has spread to involve a large portion of the peritoneal cavity without evidence of localization. Every one is agreed that in cases in which the disease is limited to the appendix immediate operation is the procedure of choice.

Those cases in which there is considerable distention, generalized rigidity and tenderness, vomiting, rapid pulse, elevation of temperature to over 101 F. and no definite mass constitute the type in which the mortality averages 41.2 per cent in some of our best clinics; we designate these cases as generalized peritonitis.

We believe that surgical judgment should take preference over a fixed rule as regards treating patients with appendical peritonitis. This means that the history and physical manifestations of each patient must be carefully considered before one decides on immediate or delayed operation. We also reserve the right to change our plan of treatment if conservative treatment does not bring about the desired results. Many of these patients come from a distance and are not in shape for a surgical operation at the time of admission. Dehydration, acidosis, low blood chlorides, gastric distention and often circulatory collapse are present and,

Dr. Haggard died on January 28.

we believe, should be corrected before the patient is subjected to an operative procedure.

As an example we shall consider the average case of a young adult with peritonitis who is admitted on the fourth or fifth day of his illness. There is a 60 per cent chance that he has had violent purgation and has been vomiting more than the small amount of liquid taken. The temperature is elevated to 103 F. The hippocratic facies is evident; the pulse is between

TABLE 3.—*Comparison of Mortality Statistics in University Hospitals*

| | University of Minnesota (Sterling, L.) 1902-1934 | | University of Michigan (Collier and Potter) 1931-1933 | | University of Iowa (Pattison) 1919-1934 | | Vanderbilt University 1925-1935 | | Average | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. of Cases | Mortality, % | No. of Cases | Mortality, % | No. of Cases | Mortality, % | No. of Cases | Mortality, % | | Mortality, % |
| Simple acute appendicitis | 110 | 0.90 | 213 | 0.46 | 814 | 0.37 | 686 | 0.15 | | 0.49 |
| Appendical abscess | 59 | 6.7 | 55 | 5.7 | 268 | 8.6 | 118 | 4.2 | | 6.3 |
| Local peritonitis | 21 | 9.5 | 88 | 12.5 | 48 | 4.2 | 87 | 8.1 | | 7.7 |
| General peritonitis | 46 | 43.4 | .. | ... | 81 | 43.2 | 103 | 36.9 | | 41.2 |
| Total..... | 236 | 7.5 | 336 | 4.1 | 1,211 | 5.2 | 994 | 5.1 | | 5.5 |

120 and 140, full and bounding; respirations are thoracic, shallow and rapid, and both diaphragms are elevated. Cyanosis may be present. The abdomen is symmetrically distended, generally rigid and tender, with maximum tenderness in the right lower quadrant. No mass is felt through the abdomen or rectum. The white blood count will be around 20,000 plus and urinalysis essentially normal except for concentration and a small amount of albumin. To subject this patient to immediate operation plus an anesthetic is a mistake. We would place this patient in Fowler's position and carefully administer 1,000 cc. of 10 per cent dextrose intravenously and 2,000 cc. of physiologic solution of sodium chloride subcutaneously at once. To relieve the distention, a duodenal tube with a small rubber balloon near the tip (Miller-Abbott tube) would be passed into the stomach and connected with a constant suction-siphonage outfit, which can be set up easily even in the home. This tube takes the place of enterostomy, without its danger. Fluids by mouth are then allowed. Morphine in moderate doses should be given at regular intervals, usually every four hours. Rectal tips or tubes are inserted at intervals. Turpentine stupes or warm compresses are helpful in relieving abdominal distention. The patient is given small transfusions of 300 cc. of citrated blood at intervals of two or three days.

### OXYGEN

Oxygen does something for the patient in increasing his resistance or it decreases the virulence of the microorganism. Nearly 100 per cent oxygen, certainly from 95 per cent up, can be given with the Mayo mask in the alveoli of the lungs, whereas the normal amount of oxygen would represent only about 60 per cent in the alveoli. Helium facilitates the delivery of the oxygen in cases of severe involvement.

Spreading peritonitis is due to the bacteria contained in fluid filled with fibrin and leukocytes. The adjacent serous surfaces become adherent and grown together by fibrinous adhesions. The omentum—the policeman of the peritoneum—at once goes to the affected area as a protection. There is a limiting wall formed which encapsulates the micro-organism and tends to protect the outlying peritoneum from invasion. This results in adynamic ileus and is the reason why purgation is so often death dealing. Purgation is like the torpedo of a submarine which destroys its victim. Can you imagine a more perfect setup for protection than the distended intestine agglutinated by universal fibrinous adhesions to encapsulate the micro-organisms and then destroy them by the chemistry of the peritoneum? According to Love, this occurs in from 65 to 70 per cent of cases. Occasionally in the remaining 25 or 30 per cent suppuration occurs instead of spontaneous subsidence of the infection in the development of an abscess. In about 5 per cent of cases the infection tends to extend. Under those circumstances in an extremely sick patient it is quite inadvisable to intervene and break up the adhesions which are trying to wall it in. It is better to wait until the signs of inflammation have subsided. Thus one avoids shock of the initial rupture that would save the patient from the danger of dissemination by operation until such time as his own immunity has developed. When the peritonitis subsides, the appendix can be removed. In about 25 per cent of patients the process will become localized and the abscess can be opened and the pus drained by aspiration only, with a very good chance of success. Unless the appendix is easily seen, it should not be sought for. Unfortunately, the majority of patients are admitted to the hospital when the condition is "too early for the late operation and too late for the early operation."

Hunter and Carr in 1932 reported a death rate for appendical peritonitis at Ann Arbor, Mich., of 58 per cent. Since then conservative treatment has been initiated in cases of peritonitis and in those of abscess and the mortality has fallen to 8.6 per cent and 5.6 per cent respectively.

TABLE 4.—*Results of Immediate Operation in Generalized Peritonitis*

| Author | Number of Cases | Mortality, per Cent |
|---|---|---|
| Potter and Coller * | XX | 52 |
| Wright | 44 (1935) | 45.4 |
| Pattison | 81 | 43.2 |
| Stanton | 113 | 42 |
| Wright (3-6 hours' delay) | 69 (1938) | 11.7 |
| Guerry * | 94 | 10.4 |
| **Delayed Operation** | | |
| Hawk | 10 | 60 |
| Sperling | 46 | 43.4 |
| A. J. Ochsner | 53 (1904) | 30 |
| Kirtley and Daniels * | 314 | 16.2 |
| Potter and Coller * | XX | 8.6 |
| Guerry * | 135 | 1.4 |

* Includes also localized peritonitis and appendical abscess.

Sworn and Fitzgibbon quoted reports on 457 patients admitted to the hospital with a palpable mass. In 189 cases immediate operation yielded a mortality of 7.9 per cent. In 290 cases, in which conservative treatment and no operation was carried out, the mortality rate was 0.68 per cent. Sir James Barrie, of London, says that when he was house surgeon at St. Bartholomew's Hospital thirty-one patients with typhlitis, as appendicitis was then called, were admitted. There was only one death in this series.

### THE USE OF ALCOHOL INTRAVENOUSLY IN SEVERE PERITONITIS

In Bellevue Hospital, Mueller employed alcohol intravenously in a series of 2,000 infusions, originally to prevent any reaction but later as a sedative in all sorts of surgical cases in which the patient was very ill, and "gave euphoria and drowsiness as substitutes for misery and apprehension." Many patients, unable to eat, were supplied with two and three times the amount of easily assimilable carbohydrate. A 5 per cent concentration of alcohol, shaken well in 2,000 cc. of saline or dextrose-saline solution, was employed. About 100 cc. of alcohol was given in twenty-four hours. This does not have to be sterilized. It is the equivalent of carbohydrate, supplying the body with energy and, like carbohydrate, can prepare tissue protein. It has no ill effect when given intravenously, such as acidosis, headache, vomiting and nausea. Nearly twice as much caloric value is available as for ordinary dextrose. It eliminates morphine. Vasodilating alcohol is produced. It is eliminated through perspiration.

### OUTLINE FOR CONSERVATIVE TREATMENT OF DELAYED APPENDICITIS

1. Nothing by mouth.
2. Wangensteen tube or Miller-Abbott tube for intestinal distention.
3. From 5,000 to 8,000 cc. of 5 per cent or 10 per cent dextrose and saline solution daily, so that the urinary output must be 1,500 cc. in twenty-four hours.
4. The intestinal canal at entire and complete rest from five to seven days.
5. Small transfusions.
6. Oxygen mask.
7. Fowler's position.
8. Hot fomentations or an ice bag to the abdomen.

The proper management of these cases requires the utmost skill and taxes the experience and judgment of the surgeon to the limit (Coller and Potter).

The fact that appendicitis is much more deadly in the young and at the other extreme of life also raises the question as to whether deferred operation would be as applicable to them as to the middle aged person.

An early mass denotes an appendix wrapped in the omentum, lying superficially and easily palpated. It is a safe case because one can sometimes remove the appendix wrapped in its little coverlet of omentum, without unfolding it, by amputating the omentum. And even if it is necessary to unwrap the gangrenous appendix it is so surcharged with the healing element that the results are beneficial in restoring the patient's body chemistry and fluids.

Patients on the fatal third and fifth days would stand operation poorly because of the trauma to the peritoneum before the patient's immunity gets started. The peritoneum develops greater protective powers and repair in the absence of trauma.

Morphine increases the tone of the intestine and prevents adynamic ileus, which is really the cause of most of the deaths. The deferred operation is not intended to evade operation but simply to get the patient in proper condition. The entire inflammatory process may disappear by resolution. This occurred in sixty of Gardner's seventy-seven cases under conservative treatment. Among the patients who entered with inflammatory mass or had it develop under this conservative treatment, the mass entirely disappeared in 53.78 per cent (Gardner).

Love reports 68 per cent of 341 cases as having completely subsided under a conservative regimen.

If the temperature is not subsiding after a week, or the mass is increasing in size, or if pain becomes conspicuous after four or five days of treatment has elapsed, operation should be considered.

If the temperature rises and pain continues and the abdominal signs do not recede, conservative treatment will have to be abandoned as operation will have to become immediate in case the peritoneal tension should continue to progress or if an abscess should rupture into the peritoneal cavity.

TABLE 5.—*Analysis of 3,746 Cases of Appendicitis at Haggard Clinic*

| | Cases | Deaths | Mortality, per Cent |
|---|---|---|---|
| Acute appendicitis | 2,007 | 12 | 0.54 |
| Localized peritonitis or abscess | 417 | 24 | 5.7 |
| Generalized peritonitis | 189 | 47 | 24.8 |
| Total (1915-1938) | 2,613 | 83 | 3.1 |
| Previously reported (1900-1915) | 1,133 | 29 | 2.5 |
| Entire group | 3,746 | 112 | 2.9 |

Should resolution occur, the appendix should be removed at the end of eight weeks. Gardner found that in 126 cases in which operation was delayed the mortality rate was 8.7 per cent, as contrasted with 18 per cent in immediate operation. Adams reports a mortality rate of 4.2 per cent among 214 patients treated by the delayed operation as against 13.2 per cent of 553 patients treated by immediate operation.

Coller and his colleagues found that the average surgical patient loses about 2,000 cc. of water by vaporization from the skin and lungs; 1,500 cc. of urinary output is needed for normal renal functioning. Thus 3,500 cc. is the basic daily requirement and in dehydration and vomiting they advise adding enough fluid to equal 6 per cent of the patient's body weight. Enough saline solution should be given to replace that lost from the stomach, and the rest of the fluid should be 5 or 10 per cent dextrose in distilled water. For a man weighing 80 Kg., 8,300 cc. would be required. It is obvious that 2 or 3 liters is entirely inadequate. Too much saline solution would lead to salt edema. Under this regimen the average patient with peritonitis will improve, and we would expect the process to undergo resolution or result in one or possibly more well localized abscesses which can be safely drained on the twelfth or fourteenth day. Should the patient not show improvement following correction of acidosis and dehydration, operation may be considered, and he is now in better shape to withstand an anesthetic and operation than before, and only a few hours or days have been sacrificed.

Conditions found at autopsy indicate that death occurs in peritonitis from two main causes: (1) intestinal obstruction and (2) circulatory collapse or shock.[1] Both of these may be combated by the use of duodenal decompression. The advantages of the Miller-Abbott tube over the shorter Levine tube are obvious. With the bolus-like balloon being propelled far down into the small intestine, gas is removed both in front of and behind the balloon. In some instances the tube has passed into the rectum. It has all the advantages of an enterostomy with none of its dangers and is an important agent either before or after operation.

1. Wright, Thew; Aaron, A. H.; Regan, J. S., and Milch, Elmer: The Management of Patients with Diffuse Peritonitis, J. A. M. A. 113: 1285 (Sept. 30) 1939.

The most serious mistake the doctor makes is in thinking that the patient, although ill with appendicitis, is hardly ill enough to be operated on. No case, provided it is appendicitis, is too mild for operation.

It is difficult to say which is worse, the early purgation treatment or the late surgical treatment. If both were omitted and the early operation could be substituted, the appendicitis massacre would be a thing of the past. When the early, safe period for prompt operation has been frittered away, conservative treatment often is most judicious.

King Edward VII was operated on by Sir Frederick Treves on the eighth day, drainage was established and the appendix was not even removed. If he had been operated on on the third or fourth day he might have perished. As it was, he lived eight years to reign in then Merrie England. If such a procedure is good enough for a king, it is good enough for your patient.

Lord Moynihan says that, if no aperient has been given, starvation, opium and absolute rest may enable a deliberate and easier choice to be taken in favor either of operation or of delay, until resolution or suppuration occurs.

The Ochsner-Sherren treatment was devised to get over the danger period in operating on the third, fourth and fifth day until adequate preparation could be had and an effort made for resolution or abscess.

Abscesses that occur before the patient is brought in on the twelfth or fourteenth day practically all heal by operation, whereas, if operation had been performed in the period of the zenith of the attack—the third, fourth or fifth day—there would have been a very high death rate.

The older surgeons have seen many cases undergo resolution. I have repeatedly seen patients with abscesses decline an operation and undergo complete resolution. At the present time, however, if an attack is at all severe no physician would allow it to go through without operation. They must not be allowed to die "without benefit of clergy."

Surgeons should refrain from always removing the appendix in a walled off abscess. If it is not easily accessible, drainage is better than breaking through in less than ten minutes the walls that nature has been ten days in manufacturing.

The use of the suction pump in localized abscesses, no matter how circumscribed or how diffuse, should be all that is necessary. It is infinitely better than gauze sponges, as it does no harm and does not insult and traumatize the endothelium.

If an enterolith is found in the abscess cavity (our sponge nurse has been taught to look for them) the whole thing is over and the appendix, as a rule, gives no further trouble. If, however, an appendix is retained with an enterolith in it, it will give rise to a sinus or recurrent attacks until removed.

The real emergency is in the first twenty-four hours, not a midnight operation on the third or fourth day without any preparation or study of the case.

So-called delayed treatment in delayed appendicitis is a remedy to get rid of the danger of operating when nature can take better care of the infection which is so prone to disseminate the infection. In spreading peritonitis one accomplishes by operation the trauma that so often kills the patient. Surgery should not be asked to bear the brunt of delay, purgation, neglect and mismanagement. In many instances, delay in ruptured appendicitis is the part of surgical wisdom.

## SAFETY FACTORS IN ETHYLENE ANESTHESIA

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Ethylene ($C_2H_4$) was first generated by Ingenhauss in 1779 and its anesthetic property was demonstrated in laboratory animals by Luessem in 1885, but it remained for Luckhardt and Carter [1] to carry out conclusive experimentation on the physiologic properties of ethylene gas and to report 100 cases in April 1923, the first group in which surgical operations were performed under ethylene anesthesia on the human subject, at the Presbyterian Hospital, Chicago. Thus ethylene has been in use as a general surgical anesthetic for only sixteen years.

In August 1924 the senior author [2] instituted the use of ethylene as an anesthetic agent in the Robert Packer Hospital because neither ether nor nitrous oxide, previously used, has been entirely satisfactory as the usual anesthetic for general surgical cases. In this clinic no routine anesthetic is used, but an attempt is made to choose the ideal one for the individual case. That this has been successful, in part at least, is evidenced by the fact that many anesthetic agents are used at present in the work of the clinic: Ether following ethylene induction is used for tonsillectomies and operations about the nose and throat; avertin with amylene hydrate is used occasionally as a basal anesthetic; nitrous oxide is used in the presence of the electrocautery or actual cautery, especially for clamp and cautery removal of hemorrhoids and for orthopedic manipulation requiring the use of the fluoroscope; in minor and some major surgical procedures one of the intravenous anesthetics, pentothal sodium or evipal soluble, is frequently utilized; in major general surgery in addition to ethylene, spinal anesthesia is frequently used in low abdominal, perineal or urologic procedures, and since its introduction cyclopropane has been used in varied types of abdominal operations.

Ethylene has been employed in this clinic for fifteen years. At first it was used cautiously and only occasionally, but gradually, because it proved its adaptability to most surgical cases, it has become the anesthetic of choice for the majority of operations. During this fifteen year period from Aug. 1, 1924, to the present, ethylene has been given as the main anesthetic or for induction supplemented by ether anesthesia for 35,500 patients. The enthusiasm of the senior author for ethylene has been justified by this anesthetic, which combines relative safety with marked muscular relaxation. The opportunity is taken at this time, when the relative merits and demerits of ethylene and cyclopropane are being so actively discussed in surgical groups, to report this series of cases and to pay tribute to ethylene gas, which has not received the wide, general usage it warrants but which has done yeoman service as an anesthetic in this clinic for a period of fifteen years.

1. Luckhardt, A. B., and Carter, J. B.: Ethylene as a Gas Anesthetic: Preliminary Communication, J. A. M. A. **80**: 1440 (May 19) 1923; The Physiological Effects of Ethylene, a New Gas Anesthetic, J. A. M. A. **80**: 765 (March 17) 1923.

2. Guthrie, Donald: The Safeties of Ethylene Anesthesia, editorial, Surg., Gynec. & Obst. **43**: 703, 1926; Ethylene and Oxygen Anesthesia in General Surgery, Anesth. & Analg. **5**: 214 (Aug.) 1926.

### ADVANTAGES

For general use we believe that ethylene is superior to ether because of its more rapid, smooth and pleasant induction and because it is attended with much less postoperative nausea and vomiting and less distention, thus insuring a more prompt and less turbulent return to consciousness. The disadvantages of nitrous oxide—cyanosis and inadequate relaxation—for general surgery are well known. The patient has easier, more regular respirations and no more nausea under ethylene than under nitrous oxide. Because of the quiet, regular respirations and minimal secretion, ethylene is an excellent anesthetic for thyroid surgery, where any respiratory difficulty may be attributed to operative manipulation. Ethylene is an excellent anesthetic to be used for nephritic, diabetic or cardiovascular patients because it has little effect on blood pressure. Cyanosis is absent under the usual 15 to 20 per cent oxygen mixtures. Loss of body fluids is minimal, the dryness of skin under ethylene being very noticeable in contrast to the drenched ether patient. This conservation of body fluids protects the alkali reserve and is a factor of importance in the prevention of postoperative shock. From our limited experience with cyclopropane in 400 cases it would seem that its advantages over ethylene are principally of degree. Relaxation is a little more complete, induction and recovery time is shorter and there is less postoperative vomiting. The most noticeable difference at operation is the very red color of the blood due to the high oxygen content of cyclopropane-oxygen anesthesia.

### DISADVANTAGES

The disadvantages of ethylene are few and more theoretical than real. Some authors have contended that oozing from the wound is more marked with ethylene than with other anesthetics. The surgeons in this clinic are inclined to agree with Luckhardt and Lewis [3] that "perhaps" this is true, but it is not excessive and is of no importance during the operation or in the postoperative condition of the wound and is certainly less than with cyclopropane. The sweet sorghum odor of ethylene is not even noticed by the operating room personnel, and patients do not object to it. By far the most important objection to the use of ethylene has been its overpublicized explosibility. This factor is real in concentrations of from 22 to 40 per cent according to the United States Bureau of Mines, and several explosions occurred early in the use of ethylene as an anesthetic.

That explosions occur infrequently is evidenced by various large composite reports in the literature: Salzer reported 425,000 ethylene anesthesias with an occurrence of but ten explosions including one death. Herb [4] reported 1,005,375 ethylene anesthesias in 1933, administered by 220 anesthetists with twenty explosions resulting in one injury and five deaths. In 1930 Henderson reported from questionnaires that, of 288 hospitals, one reported an ethylene explosion and death of the patient when the cautery was used on a carbuncle of the neck, and nine others reported explosions with minor injuries to the anesthetists. A questionnaire sent to seventy-five hospitals by Hugh Cabot revealed over 146,000 ethylene anesthesias administered with one explosion when the cautery was applied to an abscessed lung and one other case in which the cautery ignited the ethylene and induced a slight burn. Two other explosions were reported, as well as one with nitrous oxide-oxygen and ether. These were all in the apparatus after the anesthesia had been completed. Another questionnaire returned by fifty-eight prominent surgeons included 163,000 ethylene anesthesias with eighteen explosions. Five were serious and one fatal.

That cyclopropane is explosive has been underemphasized until very recently, when several fatal explosions in excellent clinics have forcibly drawn the attention of the surgical world to this fact. In 1937 Eversole, Sise and Woodbridge [5] called attention to the work of Buckman and Wardell [6] on the explosibility of cyclopropane. Their work made it evident "that the average anesthetic mixture (about 15 per cent) is well within the explosive range. In this respect it (cyclopropane) is quite different from ethylene, for with that gas most anesthetic mixtures (containing probably 80 to 85 per cent ethylene) are above the explosive range." This fact has been appreciated by Lundy, who in a recent communication [7] made the observation that, whereas cyclopropane is always in the explosive range in anesthetic doses, ethylene is within the inflammable but not the explosive range unless diluted by the addition of other gases. It is obvious, then, that the danger of explosions with cyclopropane is always present whereas with ethylene it becomes possible only when the machine is flushed with oxygen or other gases are added which dilute the ethylene below the usual anesthetic concentration.

The explosibility of ethylene-oxygen is no greater than that of ether or nitrous oxide-oxygen-ether. Livingstone, Shank and Engel [8] have recently published an article of which we will briefly summarize the data that are in point. These authors reviewed a total of 102 anesthetic fires and explosions garnered from the current literature and personal communications. These were exclusive of the cases included in the various composite series mentioned. From these 102 fires and explosions there resulted forty-eight injuries and twenty-seven deaths. Ether or ether-oxygen accounted for thirty-four fires or explosions with twelve injuries and eight deaths. Nitrous oxide-oxygen-ether accounted for fourteen fires or explosions causing fourteen injuries and four deaths. Fourteen fires or explosions occurred in anesthesias of ethylene-oxygen; in these fourteen with ethylene there were eight injuries and four deaths. Cyclopropane accounted for eleven fires and explosions with one injury and five deaths. Those remaining were associated with a number of other gases.

Through Dr. Paul Wood,[9] secretary of the American Society of Anesthetics, and Drs. Everett A. Tyler and Barnett A. Greene, chairman and secretary respectively of the society's Subcommittee on Fires and Explosions, we have been supplied with a list of 192 anesthetic fires and explosions. These data represent but a part of the material secured by the committee in its recent investigations, which are soon to be published; but it is comprehensive enough, we believe, to emphasize the dangers of fires and explosions which attend the use of all inhalation anesthetics. This group includes at least part of the cases referred to earlier in this paper.

3. Luckhardt, A. B., and Lewis, Dean: Clinical Experience with Ethylene-Oxygen Anesthesia, J. A. M. A. 81: 1851 (Dec. 1) 1923.

4. Herb, Isabella C.: The Present Status of Ethylene, J. A. M. A. 101: 1716 (Nov. 25) 1933.

5. Eversole, U. H.; Sise, L. F., and Woodbridge, P. D.: The Clinical Use of Cyclopropane, Surg., Gynec. & Obst. 64: 156 (Feb.) 1937.

6. Buckman, M. A., and Wardell, C. H., Jr.: Bulletin 112, Research Laboratory, Ohio Chemical and Manufacturing Company.

7. Lundy, J. S.: Personal communication to the senior author in May 1939.

8. Livingstone, Huberta; Shank, I., and Engel, Rose: Fire and Explosion Hazard with Anesthetic Agents, Hospitals 13: 36 (July) 1939.

9. Wood, Paul, and Tyler, E. A.: Personal communications to the authors from June to September 1939.

Many of these reported accidents were due to gross carelessness and negligence and were caused by complete disregard of the safeguards which should be used in the administration of inhalation anesthetics. For example:

Thirty-nine of the accidents were due to suction-pressure machine sparks in switch or motor of machines of many different manufacturers.

Eight were due to the use of fluoroscopes.

Thirteen were due to the use of high frequency machines.

Twenty-two were due to the use of the actual cautery.

Five were due to matches or cigarets.

Seven were due to open flames.

Four were due to endoscopic instruments.

Six explosions were due to sudden release of tank pressure into anesthetic machines not bearing safety valves.

Five were caused by a combustible agent used for preparation of the surgical field.

Two were due to oxygen-oil combustions.

One was due to a faulty wall plug.

Fourteen resulted from miscellaneous causes, some of them too vaguely described to be classified in the previous group:

One was caused by rapid release of a large tank of gas with ignition of ethylene at the valve outlet.

Six involved ether-air or oxygen ignited by sparks in some form of electrical apparatus.

Five involved ether-air or oxygen ignited by sparks due to faulty wiring.

Two involved ether-air, with the cause not stated.

Sixty-six accidents were due to static sparks; these will be carefully analyzed.

The anesthetic service and the surgical departments of all hospital staffs who appreciate the dangers of fires and explosions in the use of anesthesia and who are using all known safeguards for their prevention should center their attention on those accidents due to the static spark and redouble their efforts to prevent its occurrence. Therefore we shall analyze only those accidents due to the static spark in this illuminating report of the American Society of Anesthetists. We note that sixty-six cases are reported:

Five cases involved ether-air with no injuries to patient or anesthetist.

Six cases involved ether-oxygen and caused severe burns of one patient and slight injuries to two anesthetists and one bystander.

Fifteen cases involved ether-nitrous oxide-oxygen and caused death of one patient by lung injury, bilateral lung injury in another patient, who recovered, and death of an anesthetist from burns; four patients suffered contused eyelids and other slight facial injury.

One case involved ethylene-air with no injuries.

One case involved ethylene-nitrous oxide; the anesthetist was killed by bursting of the tank and an attendant was maimed.

Twenty-four cases involved ethylene-oxygen and caused four patients to die of lung injury (three of these were also receiving ether); three anesthetists were moderately seriously injured, and three anesthetists and two bystanders were slightly injured.

Fourteen cases involved cyclopropane-oxygen and caused death of six patients by lung injury (two of these were also receiving ether-nitrous oxide); one patient possibly suffered lung injury, dying eight days later of advanced pulmonary tuberculosis and pneumonia; two patients suffered lung injuries but recovered; three anesthetists and several bystanders were slightly injured.

It is reasonable to assume that the ratio of accidents occurring in the use of ethylene and in the use of cyclopropane is greatly in favor of ethylene, because ethylene has been used extensively for years while cyclopropane has just recently been employed and is used in but few hospitals. In other words, the preponderance in the use of ethylene anesthesia, with twenty-six explosions reported over cyclopropane anesthesia, with fourteen explosions reported, is very great. Notice also that there were but three patient deaths and one anesthetist death among twenty-six explosions with ethylene, a mortality of 15.3 per cent, and there were seven deaths in fourteen explosions of cyclopropane, or a 50 per cent mortality. Explosions from cyclopropane, therefore, are much more dangerous to the patient than are those due to dilute ethylene.

Barnett A. Greene, secretary of the subcommittee, says in a recent communication: "The frequency and gravity of these accidents have been underestimated. We have encountered a definite tendency toward the public dramatization of explosions involving ethylene or cyclopropane, especially if caused by the supposedly "mysterious" static electricity. There is an opposite trend to minimize, overlook or condone explosions involving ether or those caused by the unwise use of electrical apparatus."

The publication of these investigations by the Committee on Fires and Explosions will be read with great interest.

In this clinic no explosions have occurred in more than 35,500 ethylene administrations. Nevertheless, the fact that explosions may occur makes it mandatory that surgeons who use ethylene exercise constant "diligence and vigilance," as Lundy [10] has demanded. The precautions necessary with the use of ethylene are now well established. Ethylene-oxygen is highly explosive under high pressure. This factor may be eliminated with the use of modern gas machines exemplified by the Connell machines used in this clinic, which mix the gases under low pressure. Low pressure ethylene-oxygen may be ignited, however, under certain circumstances. The source of ignition may be (*a*) a metal spark, (*b*) an open flame or (*c*) a static electrical discharge. Bishop,[11] of this clinic, has pointed out that with an anesthetic apparatus which properly screens the gases and the use of nonsparking metal parts a metal spark is very improbable. The risk of using the cautery, open flame and the like in the operating room is obvious and contraindicated when ethylene is used, although actually the danger from even such an obvious source of ignition is minimal at a distance of from 10 to 12 inches from the mask, owing to diffusion of the gas. The main hazard is ignition of the gases by a static spark within the apparatus. However, it has been demonstrated that a static spark is not likely to be generated in an atmosphere with a humidity of 56 per cent or more and cannot accumulate on a moist rubber surface. In this clinic, to avoid possible explosions several obvious precautions based on the foregoing facts have been taken. No cautery, actual or electrical, is used in a room where ethylene is being given. The operating rooms are equipped exclusively with nonsparking mercury light switches. No cigarets are smoked on the operating floor except in the dressing rooms, far from the gases. Modern anesthetic machines are used which are grounded and, through the mask and conduction tubes, ground the patient. Recently the Horton intercoupler unit has been used in this clinic to reduce further the possibility of static spark formation. The masks and rubber tubes are washed with water before being used, and a little water is kept in the breathing bags. Because it has been demonstrated that rubbing of silk against silk generates considerable static potential, our anesthetists are requested to wear

10. Lundy, J. S.: Ethylene as an Anesthetic, Hosp. Progr. **9**: 376, 1928.

11. Bishop, H. F.: Eliminating the Dangers of Ethylene, Mod. Hosp. **39**: 39 (Aug.) 1932.

only cotton hose and underclothing when on duty. Most important, the humidity is kept always above 56 per cent and the operating rooms are air conditioned and well ventilated to carry off diffused gases.

Connell,[12] in a recent address to the American Society of Anesthetists, advised that:

Anesthetic apparatus should be constructed proof against intermixture of gases under cylinder pressure. It should be constructed of sparkless metals, be tight and with central spill valve. It should be regarded as the container of explosive mixture and not subject to nearby open flame or electric apparatus when in use and should be emptied and washed free of combustive residue when not in use. Conduit connections, metal to metal, should not be disturbed or reconnected while apparatus is in use. The apparatus should not be covered while idle nor should dry hot blankets be carried past it when in use. It should be intercoupled electrically to patient and anesthetist before starting anesthesia, this intercoupling to be continuous until the mixture is washed out. This intercoupling should be remote from the gas spillage, it should be of high resistance and preferably sparkless in its own connection. Dry rubber interior should not be tolerated and preferably rubber should be treated with electrolyte to become slightly conductive.

The general surgical operations performed under ethylene anesthesia in the past three years have been reviewed, and the pulmonary complications, as well as the occurrence of phlebitis and severe surgical shock,

*Complications Occurring Among 4,634 Patients Operated on Under Ethylene Anesthesia*

| Complications | Number | Per Cent |
|---|---|---|
| Pneumonia | 9 | 0.19 |
| Pulmonary embolus | 12 (4 fatal) | 0.26 |
| Pulmonary infarctions | 6 | 0.13 |
| Atelectasis | 17 | 0.37 |
| Bronchitis-pleuritis | 9 | 0.19 |
| Tracheobronchitis | 1 | 0.02 |
| Phlebitis | 11 | 0.23 |
| Severe surgical shock | 4 | 0.08 |

have been noted. During this period of time 4,634 of these patients have had ethylene. The complications occurring in this group, in the development of which the anesthetic might reasonably be assumed to have played a part, are presented in the accompanying table.

A recent report by Rovenstine and Taylor [13] of atelectasis and pneumonia occurring under nitrous oxide, ether, ethylene, procaine hydrochloride, avertin with amylene hydrate and cyclopropane anesthesias during a two year period gave the incidence of these two major pulmonary complications as 0.5 and 0.6 per cent respectively. The incidence reported here for atelectasis and pneumonia following ethylene compares favorably with these figures. The incidence of pulmonary infarction, pulmonary embolus and bronchitis is low. These figures are much lower than those usually reported for pulmonary complications of ether. It is difficult to evaluate the role of anesthesia in the development of phlebitis. This is likewise true in surgical shock because severely shocked patients have usually undergone a long, arduous operation as well as a prolonged anesthesia. Both conditions occurred infrequently in this series.

### MORTALITY

Earlier in this paper it was stated that ethylene is a safe anesthetic; that this has been true in the work of this clinic is evidenced by the paucity of cases in which ethylene might be considered as a possible cause of immediate death. In the past fifteen years five patients who have had ethylene in whole or in part as the anesthetic agent have died during the course of the operation or immediately afterward before being returned to the room. Brief case reports follow:

CASE 1.—A white youth aged 17 years, admitted to the hospital Feb. 20, 1936, with the history and signs of appendicitis, was acutely ill but in good general condition. The heart was considered organically sound. The blood pressure was 140 systolic, 80 diastolic.

A diagnosis of gangrenous appendicitis with perforation was made and immediate operation was performed under ethylene anesthesia. A perforated appendix was found with free fluid in the abdominal cavity. Appendectomy was performed, without difficulty or visceral trauma, in thirty-five minutes. The general condition of the patient was considered good throughout the operation. About five minutes after the completion of the operation the anesthetist noticed that the patient had stopped breathing. On examination of the chest it was found that the heart had ceased to beat. All efforts at resuscitation were without success.

CASE 2.—A white man aged 54, admitted to the hospital on April 16, 1936, with a history of long standing indigestion, postprandial pain for one and one half years and gas distention, nausea and vomiting for two months, had vomited about a quart of clotted red blood [1] and was too faint and weak to get up. On examination he was found to be very pale and there was tenderness in the epigastrium. The subsequent erythrocyte count was 1,420,000 and the hemoglobin level 24 per cent. A history and the signs of asthma were noted.

The diagnosis was bleeding duodenal ulcer with marked secondary anemia and bronchial asthma. The patient was treated conservatively for thirty-four days with several transfusions, when his condition was considered satisfactory for operation. At this time the lungs were clear and the heart regular, with sounds a bit distant but of fair quality and with no murmurs. The blood pressure was 110 systolic, 70 diastolic. The erythrocyte count had risen to 3,640,000 and the hemoglobin level to 58 per cent. Under ethylene anesthesia a gastric resection was attempted. After the duodenum had been mobilized and divided and as the stomach was being mobilized, the patient suddenly stopped breathing; on examination there was found to be no heart action. All attempts at resuscitation were to no avail. Postmortem examination on the table showed extensive coronary calcification and areas of occlusion. The heart muscle was flabby and very pale in many areas.

These two deaths would have to be considered as possibly due to ethylene, although the second patient showed evidence of coronary artery disease on postmortem examination.

CASE 3.—A white man aged 70, seen in the clinic Oct. 8, 1934, had a history of soreness and progressive swelling in the left breast. He gave also a history of dyspnea on exertion and precordial pain for one year. On examination the left breast was found to be enlarged and lumpy. The heart showed evidence of myocarditis and the patient had general arteriosclerosis. Surgical treatment was advised because of the possibility of a malignant tumor of the breast, and the patient was admitted to the hospital five days later for surgical therapy. The operation was performed under ethylene anesthesia. About five minutes after the operation was completed the patient awakened and talked. He was being wheeled from the operating room when he stiffened and gave a gasp, and the heart action and respirations ceased. There was no response to attempted resuscitation. The breast condition proved to be chronic mastitis. It was considered extremely likely that this death was due to cerebral embolism in which the anesthetic agent played little part.

The two remaining immediate deaths occurred in patients undergoing thyroidectomy for toxic adenomatous goiters. Both of these patients were given 70 mg. of avertin with amylene hydrate as a basal anesthetic, followed by ethylene. One of these patients was the

12. Connell, Karl: Hazard of Explosion from the Point of the Manufacture of Gas Machines, read before the American Society of Anesthetists, Inc., April 14, 1939.
13. Rovenstine, E. A., and Taylor, I. B.: Postoperative Respiratory Complications, Am. J. M. Sc. 191: 807 (June) 1936.

subject of a previous report by Guthrie and Hughes [14] as having an avertin death and the other was likewise considered as dying of this anesthetic because death occurred just after the skin incision had been made and before much ethylene had been administered.

Two deaths in this group must in fairness be considered as possibly due to ethylene. This constitutes a mortality of two in over 35,500 ethylene administrations, or a mortality of one in 17,750 ethylene anesthetics or inductions.

Veal and Van Werden [15] have reported an immediate mortality of thirty among 33,800 patients subjected to spinal anesthesia. Foss and Schwalm [16] reported in 1933 a composite series of 4,000 operations, one half of which were performed under ether and the other half under spinal anesthesia. In these groups ten table deaths occurred under ether and one table death occurred under spinal anesthesia. Foss and Bush [17] have expanded this study to include 10,000 consecutive operations and bring the figures up to date. This recent study includes 5,000 operations under spinal anesthesia and 5,000 under general anesthesia. In this series the additional 3,000 cases of spinal anesthesia included two table deaths, bringing this occurrence to three in 5,000 cases. The additional 3,000 general anesthesias included two table deaths, thus bringing the figure to twelve table deaths in 5,000 general anesthesias. It is noteworthy that ten table deaths occurred in 2,000 ether administrations, whereas only two additional immediate deaths occurred in 3,000 additional general anesthesias in which cyclopropane-ether was the anesthetic agent. Graham and Brown [18] analyzed 1,918 cases in which spinal anesthesia was given. In this group 202 hospital deaths occurred; three deaths occurred with the patient on the table and two shortly after return to the ward which might have been contributed to by the anesthetic. Without critical analysis of these deaths or of the five table deaths in this series, it may be said that in unselected cases sudden deaths in the operating room are less frequent under ethylene than under spinal anesthesia and much less frequent than under ether anesthesia.

### CONCLUSIONS

Based on this experience in which this gas was used in whole or in part as the anesthetic agent, it is our belief that ethylene is an excellent anesthetic for general surgical use.

The induction of ethylene is rapid, smooth and more pleasant than with most common inhalation anesthetics. The respirations are quiet and regular, the skin is dry and the color good while the patient is under the anesthetic. Muscular relaxation is excellent and adequate for all general or orthopedic surgical needs. The effect of the anesthetic on blood pressure is slight. Postoperative nausea, vomiting and distention are minimal.

For general usage we believe that ethylene is an anesthetic agent superior to ether, nitrous oxide or spinal anesthetics and, from the standpoint of explosibility, safer than cyclopropane.

The disadvantages of ethylene are few. The main objection to its use has been its explosibility. This objection has been emphasized out of proportion to its merit. There have been no explosions in our experience with this anesthetic.

The avoidance of explosions requires strict adherence to a few rules. No flame must be allowed in the operating room. Static sparks must be avoided by the use of a modern gas machine and the maintenance of a humidity of 56 per cent or higher. The use of an intercoupling unit is advocated.

Pulmonary complications and postoperative phlebitis or severe shock have been infrequent among the patients operated on under ethylene anesthesia in this series. The incidence has been lower than reported for other anesthetic agents.

Five immediate deaths occurred in this series. Two of them may have been due to ethylene. This is an immediate mortality of one in 17,750 administrations.

It is our opinion that ethylene is an excellent anesthetic agent for general surgical use and that an unjust prejudice exists in the minds of the surgical profession with respect to its widely heralded disadvantages.

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14. Guthrie, Donald, and Hughes, F. A., Jr.: The Dangers of Avertin Anesthesia, Tr. South. S. A. **49**: 431, 1937.
15. Veal, J. R., and Van Werden, B. deK.: Mortality of Spinal Analgesia, Am. J. Surg. **34**: 606 (Dec.) 1936.
16. Foss, H. L., and Schwalm, L. J.: Relative Merits of Spinal and Ether Anesthesia, J. A. M. A. **101**: 1711 (Nov. 25) 1933.
17. Foss, H. L., and Bush, L. F.: The Present Status of Spinal Anesthesia, Ann. Surg. **110**: 851 (Nov.) 1939.
18. Graham, R. R., and Brown, W. E.: Spinal Anesthesia in Abdominal Surgery, Ann. Surg. **110**: 863 (Nov.) 1939.

## THE EFFECT OF PROLONGED ADMINISTRATION OF ESTROGEN

### ON THE UTERUS AND THE ANTERIOR PITUITARY OF HUMAN BEINGS

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Gardner, Allen, Smith and Strong [1] succeeded in producing in mice a large carcinoma of the cervix with metastases in the lumbar lymphatic glands by treating the animals for 319 days with 10,500 international units of estradiol benzoate. This tumor could be successfully transplanted to male and female mice of the same strain and in this strain it developed rapidly without any further treatment with estrogen. Even previously some authors had reported certain individual cases in which the administration of estrogen had produced cervical carcinomas in mice.[2] As a matter of fact, we cannot draw conclusions concerning the human subject from results obtained in mice, but just the same the knowledge of the experimental production of carcinoma of the uterus by the use of estrogen, even if this has happened but rarely, must alarm the clinician; and all the more so since similar results have been obtained in monkeys. Overholser and Allen [3] observed a very suspicious lesion of the cervix in a castrated Macacus rhesus (monkey 11) which had received 2,802½ international units of estrogen and 10.7 cc. of progesterone during fifty-one days. They handed the preparation over to Dr. James Ewing of Cornell University, who diagnosed the initial stage of a carcinoma. Engle and Smith [4] treated four Macacus monkeys for from sixty to 170 days with a total of from 33,400 to 95,400 international units. The changes of the cervix uteri were in the direction of a metaplastic development of

1. Gardner, W. U.; Allen, Edgar, Smith, G. M., and Strong, L. C.: Carcinoma of the Cervix of Mice Receiving Estrogens, J. A. M. A. **110**: 1182 (April 9) 1938.
2. Loeb, Leo; Burns, E. L.; Suntzeff, V., and Moskop, Marian: Proc. Soc. Exper. Biol. & Med. **35**: 320 (Nov.) 1936. Perry, Isabella H., ibid. **35**: 325 (Nov.) 1936.
3. Overholser, M. D., and Allen, Edgar: Proc. Soc. Exper. Biol. & Med. **30**: 1322 (June) 1933.
4. Engle, E. T., and Smith, P. E.: Anat. Rec. **61**: 471 (March 25) 1935.

squamous epithelium in the cervical glands, but no suggestions of carcinoma. Zuckermann [5] treated monkeys for even a longer period, namely up to 365 days, with a total of 265,000 international units of estrone. He found erosions of the cervix but no carcinomatous changes.

### INVESTIGATIONS IN HUMAN BEINGS

The question of whether estrogen can exert a carcinogenic effect is of extreme importance to the clinician. If there is really a danger of producing a carcinoma in man through the administration of estrogen our use of this substance should be restricted to the utmost.

Although for many years I have frequently used estrogen therapeutically, I have never encountered any changes of the uterus which I could suspect of having resulted from the alleged carcinogenic action of the substance. We treated chiefly amenorrheic women, who received the usual dose of from 200,000 to 400,000 international units of estrone or estradiol benzoate. In other cases I used far larger doses, particularly as I had observed that some types of sterility could be remedied by such large doses; in all these cases there appeared no clinical changes of the uterus suggestive of carcinoma. I am going to describe two cases:

CASE 1.—N., aged 23, sterile, had menstruated regularly, the flow lasting for from four to five days. A diagnostic curettage performed before menstruation showed that the mucous membrane was in the premenstrual stage with normal glycogen content. From the fourth to the twenty-seventh day of the cycle the patient received 50,000 international units of estradiol benzoate (one ampule of dimenformone benzoate) daily, a total dosage of 1,200,000 international units of estradiol benzoate. On the twenty-eighth day of the cycle, biopsy of the cervix was performed and several strips were removed from the uterine mucous membrane. Examination revealed that the portio was perfectly smooth; there were no erosions. The cervical mucosa showed a striking abundance of glands. The lumens of the glands were very wide and in certain portions cystically enlarged in such a way that under low power some of the glands occupied the entire microscopic field. Some of these glands were lined by tall columnar epithelium with flattened nuclei (goblet cells), in some places forming papillae. In the lumens of the glands there were mucus-like plugs without cellular elements and only rarely desquamated cells.

More or less abundant cervical glands are seen in every case of erosion of the portio, but not in such quantities as were seen in this preparation. It can be assumed that the hormonal stimulus brought about the increase in the glands.

In places where there were no glands we observed a large number of thick-walled blood vessels with hypertrophied media and numerous dilated veins.

The uterine mucosa showed the picture of the intermenstruum. It did not correspond to the twenty-eighth but rather to the twelfth day of the menstrual cycle.

Best's stain for glycogen was negative.

Quantitative examination of the glycogen content of the uterine mucosa [6] revealed 0.05 per cent (the physiologic content on the twenty-eighth day of the cycle is from 0.3 to 0.6 per cent).

CASE 2.—Another patient, treated the same way, gave the same results; therefore the description of this case can be omitted.

These two observations demonstrate that the administration of 1,200,000 international units of estradiol benzoate—from three to four times as much as the dose used in treating amenorrhea—produces an inhibition of the development of the uterine mucosa in women and moreover increases the number of the mucous glands of the cervix but does not induce any changes of a carcinomatous nature.

CASE 3.—A woman aged 26 had had both breasts removed because of a bilateral mammary carcinoma. She [7] was given 0.6 Gm. of estradiol benzoate (6,000,000 international units) during a period of sixty days, being injected daily with two ampules of dimenformon (100,000 international units) intramuscularly. On admission there were local recurrences, pleural metastases (pleural exudate) and vertebral and cutaneous metastases (lymphangitis carcinomatosa). In addition, at autopsy metastases were found in the liver and ovary. In this desperate case we tried to inhibit the growth of the carcinoma by very large doses of estrogens.

I was induced to attempt this treatment for the following reasons: 1. Large doses of estrogen inhibit (as has been demonstrated by previous investigations [8]) the release of the gonadotropic hormone into the blood stream from the anterior pituitary, so that the ovarian function ceases. As is well known, castration favorably influences mammary carcinoma and so we tried to attain this end similarly by "hormonal castration." 2. It has been reported in the literature [9] that the growth hormone of the anterior pituitary hastens tumor growth. If rats which have been inoculated with Jensen sarcoma are hypophysectomized, the tumors do not grow. If Evan's growth hormone is now administered to the animals, tumor growth continues. Large doses of estrogen are able experimentally to produce dwarfing [9] by inhibiting the release of the growth hormone of the anterior pituitary into the blood stream. We made the attempt to inhibit the growth of the carcinoma by eliminating the pituitary growth hormone in human beings as well.

It may be that the doses administered (10 mg. of estradiol benzoate daily) were insufficient. In any case no clinically perceptible inhibition of the carcinomatous process could be observed.

Estrogenic hormone is able to disturb the normal ovarian cycle. The period of menstruation can be postponed; thus in women artificial amenorrhea results.[10] This event occurred in our case too. The last menstruation had been on Nov. 29, 1937. Estrogenic treatment began on December 12; it was therefore the fourteenth day of the cycle. The expected menstruation did not take place December 26 but only on January 19, having thus been postponed for twenty-five days. While the patient previously had bled for four days at this period there was only slight bleeding of one day's duration. The next bleeding took place early in the morning of Feb. 20, 1938, and lasted for several hours only. On this day the patient died. At autopsy we were able to obtain the genital organs, the hypophysis and the other endocrine glands and the following facts were noted: [11]

*Uterus.*—On gross examination the vagina was normal. The external os of the uterus was round. The uterine portio showed a large circular, chiefly papillary, erosion. The mucous membrane of the cervical canal was bright red. The plicae palmatae were particularly well marked. Above the internal uterine os there was a pale zone 0.5 cm. wide (corresponding to the lowest uterine segment "dehnungszone"). This pale zone was in striking contrast to the dark red mucous membrane of the corpus uteri. The latter had a very unusual appearance.

5. Zuckermann, Solly: Lancet **1**: 435 (Feb. 20) 1937.

6. The results of the chemical analyses of the uterine mucosa for its glycogen content will be reported elsewhere.

7. Dr. Halberstaedter transferred the patient to us for treatment.

8. Zondek, Bernhard: Lancet **1**: 10 (Jan. 4), **2**: 842 (Oct. 10) 1936; Folia Clin. Orient. **1**: 1 (May) 1937.

9. Reiss, M.; Druckrey, H., and Hochwald, A.: Ztschr. f. exper. Med. **90**: 408 (Nos. 3-4) 1933.

10. Zondek, Bernhard: Hormone des Ovariums und des Hypophysenvorderlappens, ed. 2, Berlin, Julius Springer, 1935, pp. 387, 499, 507; Wien. klin. Wchnschr. **49**: 453 (April 10) 1936.

11. Prof. Dr. Getzova, director of the pathologic institute of the Hadassah University Hospital, Jerusalem, made the anatomic examinations.

There were netlike whitish formations on the surface. On submerging the specimen into water we noticed a great number of fluctuant masses looking like fine polypi.

Microscopic examination revealed that the glands were slightly enlarged and not tortuous at the level of the internal orifice of the oviduct. The rest of the mucous membrane of the corpus, however, showed markedly distended glands, which were inflated in a balloon-like fashion projecting toward the lumen and frequently torn; there were the areas which corresponded to the fluctuant masses which had been seen on gross examination. That the tears were spontaneous ones was proved by the fact that even the glands of the deeper layers of the mucous membrane occasionally showed here and there such ruptures. The epithelium of the glands was cylindric. In some places, however, it was flattened in an endothelial manner, and such areas were found in the normal as well as in the distended glands. The lumens of the glands were for the most part empty, but now and then they were found to contain a considerable number of erythrocytes. The mucous membrane of the corpus showed striking hyperemia. Here the blood vessels were markedly engorged. They were thin walled, lined only by endothelium and without adventitia. In some portions no endothelial nuclei were present and the wall was demarcated merely by a delicate line of plasma. The picture suggested that particularly in this area a rather active diapedesis had taken place, since erythrocytes were found in the adjacent stroma. On the other hand, erythrocytes could be found in the adjacent stroma in areas where the endothelium had abundant nuclei. There were slight interstitial hemorrhages, but nowhere was a break of continuity of the vessel walls to be detected. In the immediate neighborhood of the ruptured glands already mentioned vessels with entirely intact endothelium were seen. The hemorrhage which had occurred on the day of death could not have been due to the rupture of the superficial capillaries but probably was due to (*a*) diapedesis and (*b*) exudation of blood from the ruptured glands.

Thus the uterine mucosa showed a peculiar picture of glandular cystic hyperplasia in which the glands which were ruptured in many places projected in a balloon-like fashion toward the lumen. There was a considerable degree of hyperemia and hemorrhage. Toward the lower uterine segment ("dehnungszone") the mucous membrane suddenly became quite thin; the glands were no longer inflated and nowhere torn. The blood vessels were narrow and did not contain erythrocytes. Thus the anemic thin mucosa of this zone contrasted to the thick, hyperemic mucosa of the corpus.

In the cervix the orifices and all the lumens of the glands were distended. The lining epithelium was of tall columnar type but there was no hyperemia.

The cervical mucous membrane extended on the vaginal surface of the uterine portio. Bordering the squamous epithelium (remainder of the vaginal surface of the portio) the stroma was infiltrated with lymphocytes and plasma cells. The picture was that of a common papillary erosion of the portio. The rather anemic mucous membrane of the cervix became hyperemic at the area of erosion. Within the squamous epithelium of the portio (remainder of the vaginal epithelium of the portio) there were, beginning near the site of the erosion, some scattered ridges of epithelium extending into the stroma, the latter with dilated blood vessels. Toward the vagina, small epithelial buds extended into the depth though fairly distant from one another. In this area there was hyperemia and the stroma was slightly infiltrated with round cells. The epithelial projections in some areas were pediculated, and it appeared that some of them were separated from their origin. There was nowhere evidence of carcinoma.

*Ovary.*—There were no primitive follicles, no ripening follicles, no fresh corpus luteum, but numerous corpora albicantia with remainders of lutein cells. In both ovaries there were extremely small metastases of the primary cancer of the breast.

*Pituitary Gland.*[12]—The gland weighed 710 mg. (the average weight, according to Erdheim-Stumme, for the age group of 21 to 30 for nulliparas being 595 mg.). The gland was fixed in Orth's fluid and embedded in paraffin. On cross section through the anterior lobe a discrete pale nodular area was seen with the naked eye delineated by a delicate reddish line. Exact measurement revealed that this area occupied half of the anterior lobe.

On microscopic examination the posterior lobe failed to show any considerable deviation from the normal. The lower and anterior part of the anterior lobe were almost normal as to cellular structure, although in some places the eosinophilic cells preponderated. In the upper posterior zone the circular area which we had already observed on gross examination appeared to consist almost exclusively of eosinophilic cells. (Azan-stain, modified according to Peterson, was used.) This area was limited anteriorly by a wide band of fibrous tissue with abundant blood vessels. In the other portions the eosinophilic nodule was defined by a sudden change of the cellular character without, however, any limitation by a fibrous capsule. The anatomic diagnosis was circumscribed hyperplasia (according to another terminology "adenoma") of the eosinophilic cells.

*The Other Ductless Glands.*—The thyroid and parathyroid gland, the adrenals and the pancreas were normal.

12. Dr. Henry Ungar made the anatomic examination of the hypophysis.

## COMMENT

As has been demonstrated by former investigations,[10] the normal ovarian cycle in women can be inhibited by the administration of estrogen. Menstruation can be postponed from seven to seventy days and thus artificial amenorrhea can be produced. The uterine mucous membrane does not develop further than the intermenstrual stage. The progestational transformation (second generative phase) is skipped. The dose of estrogen necessary for postponing menstruation is at least 70,000 international units. The substance brings about inhibition by blocking the gonadotropic secretion of the anterior pituitary. Thereby the development of corpus luteum and, consequently, the production of progesterone are impaired. If enormous doses of estrogen are given, the corpus luteum formation can be absolutely prevented. This event is demonstrated by the third case reported. In the ovaries there were neither ripening follicles nor any fresh corpus luteum and they therefore appeared similar to senile ovaries. Consequently we are able by the protracted administration of large doses of estrogen to produce functional castration in women—in other words, hormonal sterilization. Our patient, however, had small uterine hemorrhages twice in spite of the elimination of the ovarian function. This had been brought about in the following way: As a rule the uterine mucosa remains thin and does not develop further than the intermenstrual stage. Large doses of estrogen, more than 600,000 international units, can induce glandular cystic hyperplasia and hyperemia owing to the local effect of the substance. This is particularly evident in case 3. The hemorrhage probably occurred by diapedesis and by the oozing of blood from the ruptured glands. It was therefore a hemorrhage from a glandular-cystic hyperplastic mucosa, not, however, a menstrual hemorrhage.

Even macroscopically the uterine mucosa showed a peculiar appearance such as I have never seen previously. Particularly characteristic were the fine, villous papillary formations, which fluctuated in water and thus gave a very peculiar appearance to the mucosa. These villous formations were due to glands dilated in a balloon-like fashion and frequently torn toward the lumen. There is no doubt that these changes in the uterine mucosa were caused by the enormous chronic local irritation of such extremely large doses of estrogen (6,000,000 international units during sixty days). Such doses, as a matter of fact, have not been used up to the present in man as far as I can judge from the literature.

The mucous membrane of the lower uterine segment ("dehnungszone") was not in the least influenced, in contrast to the mucous membrane of the corpus uteri.

The striking enlargement of the cervical glands observed in all three cases probably was due to the treatment.

In the two first cases (twenty-eight days' treatment with 1,400,000 international units of estradiol benzoate) the portio did not show any erosion. In the third case (6,000,000 international units during sixty days) a large, partly papillary erosion of the portio developed during the period of treatment. Within the area of the erosion, however, no appearances indicating carcinomatous changes could be found. Even after such a protracted treatment with large doses of estrogen, therefore we could not find carcinomatous changes in the uterus in spite of the fact that we were observing a carcinomatous patient who had a predisposition toward malignant formation. The continuous administration of large doses, however, cannot be considered harmless, since a large erosion of the portio developed during the period of treatment. Care should be taken if previous to treatment an erosion has already been present; for theoretically it is conceivable in any case that the chronic hormonal stimulus might give rise to the development of malignant formation on the basis of an erosion. For this reason it is necessary not to perform hormonal treatment continuously but to allow intervals without treatment to intervene, a fact which has already been pointed out by Zuckermann based on his experiments in monkeys. The treatment with estrogen, therefore, should not, as it sometimes happens, be continued for months.

The anterior pituitary in case 3 contained a large eosinophilic area occupying half of the entire anterior lobe. Such formations at present are called pituitary adenomas in the literature, although they are not defined by a fibrous capsule. In our case the fibrous border was only partial. We should designate such formations as "circumscribed hyperplasia." The question shall be discussed as to whether, in our case, the large eosinophilic "adenoma" was a consequence of the chronic treatment with estrogen or whether it was an accidental accessory finding. Costello [13] systematically examined 1,000 hypophysial glands from the autopsy material of the Mayo Clinic and found that 225 of these glands contained one or more, namely a total of 265 adenomas. These were classified as follows: chromophobic 140 (82.8 per cent), eosinophilic twenty (7.5 per cent), basophilic seventy-two (27.2 per cent) and mixed types thirty-three (12.4 per cent). Among 1,000 hypophysial glands there were, therefore, no more than twenty eosinophilic adenomas (2 per cent). The eosinophilic adenoma in itself occurs much less frequently than the basophilic adenoma, although in the human hypophysis eosinophilic cells (37 per cent) are much more frequently found than basophilic cells (11 per cent) as reported by Rasmussen.[14] Close [15] reported that the incidence of pituitary adenomas was approximately 10 per cent in a series of routine postmortem examinations (280 cases) but that it ran as high as 44 per cent in those cases in which there was associated carcinoma in other glands. In two cases of mammary carcinoma and in one case of ovarian carcinoma Close did not find any adenoma of the pituitary, which is important for the estimation of our case. The adenomas consisted in the vast majority of cases of chromophobic cells. There were small eosinophilic adenomas in only two (among thirty-nine cases). As shown by the investigation of Karlefors, Berblinger and Muth the carcinoma if it induces any changes at all brings about an increase in the number of chromophobic cells, sometimes with transformation into pregnancy cells. The spontaneously occurring pituitary adenomas need not give rise to clinical symptoms and so Costello calls them "subclinical adenoma."

It can therefore scarcely be proved with certainty whether or not anatomic observations in the anterior pituitary are merely accidental. I believe that in our case the eosinophilic "adenoma" was a consequence of the chronic administration of estrogen for the following reasons:

1. We were considering an eosinophilic adenoma, which is rarely encountered.

2. It was a very large adenoma occupying half of the entire anterior lobe; such large eosinophilic adenomas rarely occur spontaneously.

Though the protracted treatment with estrogen inhibits the release of the growth hormone, the pituitary showed immense increase in the number of eosinophilic cells.[16] The fact, moreover, is of interest in that the other endocrine glands, particularly the thyroid gland, were not affected in any way whatever. The endocrine glands which could be examined were normal.

## SUMMARY

1. The normal ovarian cycle in women can be inhibited by estrogen. Menstruation can be postponed for from seven to seventy days and artificial amenorrhea can be produced in this way. The dose necessary for bringing about this effect is at least 70,000 international units.

2. The inhibition of menstruation is brought about in such a fashion that the estrogen blocks the gonadotropic secretion of the anterior pituitary, whereby the development of the corpus luteum and progesterone production are prevented. Consequently the uterine mucosa cannot develop, the progestational transformation is omitted and glycogen is not produced (inhibition of the second generative phase).

3. Still larger doses of estrogen (more than 600,000 international units) are able to cause the uterine mucosa to react with glandular cystic hyperplasia owing to the local effect of the hormone.

4. Protracted administration of immense doses (6,000,000 international units over sixty days) prevents the ripening of the follicle as well as corpus luteum formation, so that the ovaries appear to be those of an old woman (inhibition of the first and second generative phase). Estrogen, therefore, is able to induce functional castration or, in other words, hormonal sterilization.

5. The cervical glands react to estrogen with marked enlargement.

6. The administration of 1,400,000 international units of estrodiol benzoate during the course of twenty-eight days does not bring about any changes of the portio. The administration of 6,000,000 international units during sixty days induced the formation of a large, partly papillary, erosion of the portio, which demonstrated that an erosion of the portio can be caused by hormonal irritation.

13. Costello, R. T.: Am. J. Path. **12**: 205 (March) 1936.
14. Rasmussen, A. T.: Am. J. Path. **9**: 459-471 (July) 1933.
15. Close, H. G.: Lancet **1**: 732 (April 7) 1934.

16. The pituitary of rats reacts with formation of chromophobic adenomas after several months' treatment with estrogen.

7. Even extremely large doses of estrogen did not give rise to carcinomatous changes of the uterus.

8. The reaction of the anterior pituitary to the administration of 6,000,000 international units of estradiol benzoate is that of marked increase in the number of the eosinophilic cells. An eosinophilic hyperplasia ("adenoma") was found occupying half of the entire anterior lobe.

9. The other endocrine glands showed no deviation from the normal.

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## ALLERGY INDUCED BY IMMUNIZATION WITH TETANUS TOXOID

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A toxoid for the active immunization of human beings against tetanus infection has been developed within the past few years and its efficiency as a producer of tetanus antitoxin has been well established. It has followed directly in the wake of the development of diphtheria toxoid, and today a refined alum precipitated formaldehyde detoxified tetanus toxoid standardized under rules of the National Institute of Health is commercially available. It is not within the scope of this paper to discuss the aspects of its development or its antitoxin producing capacity, all of which may be found in such recent papers, with references, as those of Bergey and Etris,[1] Jones and Moss,[2] Hall,[3] Gold[4] and Cowles.[5]

The advantages inherent in the active immunization with tetanus toxoid are that the serum antitoxin titer may be raised to a level higher than that afforded by the usual prophylactic dose of antitoxin (horse serum), that it is more lasting, that it can be rapidly reelevated by a toxoid injection in an emergency and, perhaps most important of all, that it avoids the very real dangers of reaction or sensitization incident to serum administration.

In the articles just referred to attention has been centered on the degree, the rapidity of development and the duration of the specifically protective antitetanic antibody. While some mention is made of untoward (allergic) reactions, they seem to be regarded lightly. A committee of the Surgical Society of Paris[6] investigated the work of Ramon and Zoeller and reported that "the antitetanic vaccine (anatoxin of the Pasteur Institute) is harmless, not being followed by any local or general reaction." Bergey and Etris[7] (thirty-four cases) included among points of special importance in the use of alum precipitated toxoid "the absence of either local or general reaction . . . except the slight local reaction in occasional individuals who are highly sensitive to the proteins contained in culture media." Jones and Moss[2] described two fairly severe local reactions in their fifty-eight cases, one after a first and the other after a second injection, but these were both fifth and sixth day reactions. Hall[3] reported that he started with 140 patients but that only forty-seven received a second injection, which, as will be seen, is the important point. Details were not given, but two persons had urticarial reactions to the second dose of toxoid (not alum precipitated). Epinephrine injections were given. The time of onset of the reactions was not stated. Cowles[5] did not mention any constitutional reactions among the twenty-one students receiving at least two injections. Gold[4] in his latest summary says "In our entire experience covering over 1,000 injections given in the last five years we have encountered only one systemic reaction. This occurred in a nonatopic subject who developed hives one half hour after the second injection of alum precipitated toxoid."

It will be observed that the three urticarial reactions noted occurred after the second dose and had the general characteristics of an allergic reaction in persons in whom a sensitization has been induced by a first dose given several weeks previously. No particular study seems to have been made of these cases.

It is our purpose in this paper to record a fairly severe constitutional reaction in a patient to the second immunizing dose of alum precipitated tetanus toxoid, to present evidence as to the allergic nature of the reaction and the ingredient in the preparation responsible for the reaction, and to suggest precautions that seem to be indicated when toxoid is given to patients for immunizing purposes.

### REPORT OF CASE

G. C., a man aged 44, complained chiefly of asthma, which began at the age of 23. His father had hay fever. A daughter had asthma. He had no unusual contacts and there were no indications of food or drug idiosyncrasy. Asthma started mildly while he was in a base hospital in France suffering from the effects of a gas attack. It had continued since with more or less severity and with slightly increasing disability but had always been controllable. It was usually worse at home. Tests showed positive reactions to house dust, cat dander and horse serum. On account of the latter reaction he was given 0.5 cc. of a commercial alum precipitated tetanus toxoid on June 24, 1938. No local or general reactions resulted from this injection. October 19 he was given a second dose of 0.5 cc. of the same tetanus toxoid. In about ten minutes he noticed a sense of surface warmth and itching, first in the palms, then gradually over the entire body. The face began to swell and he shortly broke out with general urticaria. There was no difficulty in breathing. The arm at the site of the injection became markedly swollen from the shoulder to the elbow. He responded to 0.5 cc. of epinephrine given subcutaneously but later needed a second dose. In four hours' time he felt generally better, but the swelling of the face and arm and some general itching remained for forty-eight hours. October 28 a scratch test on the forearm with the same tetanus toxoid diluted 1:10 gave a typical positive wheal with erythema and itching in less than five minutes. Similar tests on normal subjects were negative.

### IMMUNOLOGIC STUDIES

Blood was drawn from the patient Oct. 28, 1938, and Feb. 10, 1939, for the immunologic tests to be described. In each instance the serum obtained was filtered and tested for sterility. The Wassermann reaction was

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From the Department of Allergy, Roosevelt Hospital.

Read in part before the Society for the Study of Asthma and Allied Diseases, Atlantic City, N. J., April 29, 1939.

1. Bergey, D. H., and Etris, Samuel: Active Immunization Against Tetanus Infection with Refined Tetanus Toxoid, J. Immunol. **31**: 363 (Nov.) 1936.

2. Jones, F. G., and Moss, J. M.: Studies on Tetanus Toxoid: I. Antitoxic Titer of Human Subjects Following Immunization with Tetanus Toxoid and Tetanus Alum Precipitated Toxoid, J. Immunol. **36**: 115 (Feb.) 1939.

3. Hall, W. W.: Active Immunization Against Tetanus with Tetanus Toxoid, Mil. Surgeon **80**: 105 (Feb.) 1937.

4. Gold, Herman: Active Immunization of Allergic Individuals Against Tetanus by Means of Tetanus Toxoid, Alum Precipitated Refined, J. Allergy **9**: 545 (Sept.) 1938.

5. Cowles, Philip B.: Tetanus Immunization, Yale J. Biol. & Med. **9**: 409 (May) 1937.

6. Paris Letter: Report of a Committee on Vaccination Against Tetanus, J. A. M. A. **105**: 1202 (Oct. 12) 1935.

7. Bergey, D. H., and Etris, Samuel: Immunization of Humans with Alum Precipitated Toxoid, Am. J. Pub. Health **24**: 582 (June) 1934.

negative. The blood obtained in October is designated as G. C. serum 1 and the blood obtained in February as G. C. serum 2.

1. *Precipitin Tests.*—These tests were made by using 0.2 cc. of G. C. serum 1 in each test tube. In one experiment 0.4 cc. of a 1 per cent Berna peptone solution was used in serial dilutions ranging from 1:20 to 1:320. In a second experiment the broth medium used in making the particular toxoid was used in the same amounts and in the same dilutions. All tubes were incubated two hours at 56 C. and kept at 7 C. overnight. No precipitins were found.

2. *Passive Transfer to Guinea Pig.*—An intraperitoneal injection of 2.5 cc. of G. C. serum 1 was made into a guinea pig into which ragweed pollen extract had been injected three weeks previously. The following day the uterine strips were tested by the Dale technic. No contraction was obtained on testing with the toxoid broth, which, as will next be shown, specifically reacted in passively sensitized cutaneous sites. The muscle was reactive to the pollen extract and to histamine. A larger amount of serum might well have been used but was not available.

3. *Passive Transfer to Human Skin: Qualitative Tests.*—Sites were made by injecting 0.05 cc. of G. C. serum 1 diluted 1:10 into six normal persons acting as subjects. The sites were tested after forty-eight hours with 0.02 cc. of a 1:10 dilution of the tetanus toxoid used in the immunization of patient G. C. All the sites in the six subjects gave positive immediate wheals, whereas normal areas, where no injection was made, were nonreactive. Thus was demonstrated in G. C. serum 1 the presence of skin sensitizing antibodies for some substance in this tetanus toxoid preparation.

It was then in order to determine to which ingredient of the toxoid the patient had been sensitized. The following experiment was carried out on another normal subject: One-tenth cc. of G. C. serum 1 diluted 1:10 was injected into each of twenty-one sites. After forty-eight hours doses of 0.02 cc. of each of the various ingredients of the particular toxoid, other commercial toxoids and commercial "peptones" as listed in table 1 were injected into the sites. In this experiment the positive tests showed that the reacting substance was present in the alum precipitated tetanus toxoid (site 1), in the broth used in making the toxoid (site 2) and in the Berna peptone (site 3). A similar reaction was obtained with Witte peptone (site 4). Commercial tetanus toxoids 2 and 3 (sites 13 and 14) purchased in the open market gave indication, by positive reaction, of a "peptone" of the Witte or Berna type in the culture medium, while another, tetanus toxoid 4 (site 15), gave only a suggestion of a reaction. All the other ingredients (sites 7 to 12) used in the manufacture of the toxoid were negative by test.

Chemical analysis which need not be detailed here resulted in the separation of different fractions of three commercial peptones. It showed that Berna and Witte so-called peptones consist largely of primary and secondary proteoses with a very small percentage of peptone, while Bacto-peptone is almost a pure peptone with a very small fraction precipitated by saturation with ammonium sulfate. Neither the Bacto-peptone (site 5) nor the latter fraction when purified and redissolved in proper concentration (site 20) gave positive reactions in passive transfer sites made with G. C. serum 1. Autoclaving a 0.001 per cent solution of Berna peptone at 16 pounds pressure for twenty minutes did not appear to alter its capacity to react in normal skin sites sensitized with G. C. serum 1 (site 6). The completely dialyzed Berna peptone (site 16) as well as the purified primary (site 18) and secondary (site 19) proteoses gave positive reactions. Control tests in normal areas of skin gave negative reactions and are not recorded in the table. It is interesting that in other carefully controlled quantitative tests not detailed here, using the in vitro neutralization method, the primary and secondary proteoses were practically identical in their antibody neutralizing capacity.

As a further step we were able to secure a broth filtrate (T. S. 40), made with the nonreacting Bactopeptone, of a strain of Clostridium tetani which produces no toxin. A broth of this type from which the bacteria have been removed does contain certain reactive substances, as will be shown later; but on tests in sites made with G. C. serum 1 there was no reaction (site 21), so that no sensitization to bacterial substances was demonstrated in patient G. C.

TABLE 1.—*Tests Demonstrating Sensitization to Ingredients of Toxoid*

| G. C. Serum 1 Sites | Tested with | Result | Tests in Normal Skin |
|---|---|---|---|
| 1 | Tetanus toxoid 1 diluted 1:100 | ++++ | 0 |
| 2 | Tetanus toxoid 1 broth diluted 1:100 | ++++ | 0 |
| 3 | Berna peptone, 0.001% | ++++ | 0 |
| 4 | Witte peptone, 0.001% | ++++ | 0 |
| 5 | Bacto-peptone, 0.001% | 0 | .. |
| 6 | Berna peptone (autoclaved), 0.001% | ++++ | 0 |
| 7 | Veal infusion diluted 1:10 | 0 | .. |
| 8 | Beef infusion diluted 1:10 | 0 | .. |
| 9 | Alum, 0.4% | 0 | .. |
| 10 | Merthiolate, 0.01% | 0 | .. |
| 11 | Solution of formaldehyde, 0.05% | 0 | .. |
| 12 | Dextrose, 1% | 0 | .. |
| 13 | Tetanus toxoid 2 diluted 1:100 | +++ | 0 |
| 14 | Tetanus toxoid 3 diluted 1:100 | +++ | 0 |
| 15 | Tetanus toxoid 4 diluted 1:100 | ± | 0 |
| 16 | Berna peptone dialyzed, 0.001% | +++ | 0 |
| 17 | Berna peptone dialysate, 0.001% | 0 | .. |
| 18 | Berna primary proteose, 0.001% | +++ | 0 |
| 19 | Berna secondary proteose, 0.001% | +++ | 0 |
| 20 | Bacto-peptone, ammonium sulfate precipitate, 0.001% | 0 | .. |
| 21 | T. S. 40 diluted 1:10 | 0 | .. |

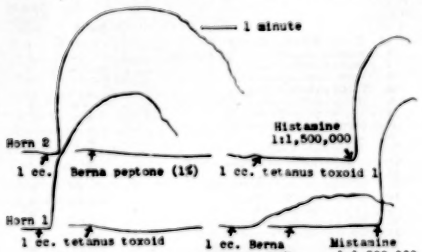
4. *Passive Transfer to Human Skin: Neutralization in Vivo.*—The injection of antigen into the sites made with sensitive serum in normal subjects uses up, or neutralizes, antibody in the ensuing reaction. When a site is retested the day after a reaction, no reaction occurs if sufficient antigen has been used. If there are antibodies for two antigens in the same serum, only the one specific for the antigen injected is used up. Such an experiment in neutralization in vivo was done. Preliminary experiments had indicated the amount of antigen necessary to neutralize the antibody in the amount of serum injected.

On the back of a normal subject sites were made by injecting 0.05 cc. of G. C. serum 1 diluted 1:10 into each site. Two days later into each site was injected 0.02 cc. of various antigens, and the presence or absence of reaction was noted. The following day, when the reacting sites had returned to normal, they were retested. The tests and results on each of the two days are recorded in table 2. Control tests in normal areas of skin were all negative and are not listed.

This experiment showed that G. C. serum 1 contained antibodies for and reacted to tetanus toxoid 1 containing Berna peptone (site 1) and to a refined secondary proteose obtained from the Berna peptone (site

2). It did not react with the sterile filtrate of Clostridium tetani containing Bacto-peptone (site 3) but no proteose. The test also showed that tetanus toxoid 1 had used up the antibody in site 1 so that no reaction was obtained with Berna peptone the following day. This result was reversed in site 2. In sites 3 and 4, tested first with the toxin free, proteose free broth filtrate, and in site 5, with Bacto-peptone, the antibody was not used up, as indicated by the later reactions with the toxoid or the Berna preparations. This experiment also showed (sites 6 and 7) that in this patient's serum the antibody for the Witte and Berna peptones was equally neutralizable by either and that the primary and secondary proteoses of Berna peptone were almost equal in reciprocal neutralizations (sites 8 and 9).

5. *Anaphylaxis in Guinea Pig.*—Fink [8] reviewed the work on antigenic properties of proteoses up to 1919 and in summary stated "Experiments with products of protein digestion have shown that proteins cannot be disintegrated much if any beyond the coagulable form without losing their sensitizing and intoxicating properties. Positive experiments reported with proteoses as anaphylactogens have not been fully confirmed." He also carried on various experiments. Of them he said




Results of the tetanus toxoid experimental (Dale technic). A guinea pig was given an intraperitoneal injection of 2.5 cc. of alum precipitated tetanus toxoid 1 Nov. 25, 1938. The uterine horns were tested on December 20.

"Anaphylaxis experiments with guinea pigs showed that the Witte 'peptone' preparations possessed only very slight power of sensitizing to themselves," and later "In all forms of antibody reaction the antigenic proteoses [9] were not specific, in that egg white could be used as antigen in place of either fraction." A review of the literature since 1919 discloses the fact that relatively little work has been done on the antigenicity of the cleavage products resulting from the action of enzymes on proteins. The present day consensus is reflected in a chapter on antigens and antibodies [10] in which the writers, mentioning these substances, said "Some positive results have been reported but these are apparently due to protein impurities in the materials used for the experiments." The only reference found in Zinsser's [11] recent book is in the discussion of plasteins, said to be formed by "enzymes acting on proteoses or peptones which are themselves nonantigenic." Wells [12] decried the experimental use of "commercial preparations of protein cleavage products such as Witte's 'peptone' and the like." It is true enough that they are variable, as he said, and the experiment suffers from the fact that without knowledge of its origin tests could not be made with the protein from which the peptone is derived; but we are dealing here with an induced sensitization in a man whose serum transferred sensitiveness to a weak solution of Berna peptone, to the primary and secondary proteoses obtained from it by repeated reprecipitations with 50 per cent and 100 per cent saturation of ammonium sulfate and to an autoclaved solution of the so-called peptone respectively. In spite of Wells's objections, then, we proceeded to determine antigenicity by intraperitoneal injections into guinea pigs of commercial tetanus toxoids and preparations of commercial "peptones" with and without alum precipitation. Evidence of sensitization was determined by the usual technic employed for the Dale test.

The accompanying chart represents such an experiment; it is typical of the positive results obtained. The intraperitoneal injection was made Nov. 25, 1938. The guinea pig was killed by exsanguination, and the uterine horns were immediately removed and tested on December 20. After each test the bath was changed and washed. The addition of tetanus toxoid to the bath produced a prompt contraction of the first horn. The toxoid was again added with no response. Berna peptone was added and a slight contraction was obtained. When repeated, the test was negative. Histamine was then added and a prompt contraction occurred. Horn 2 was placed in the bath and Berna peptone was added. It produced a contraction, and the horn was negative to further test with this peptone and the toxoid with which the animal was sensitized. The histamine reaction was positive. Of a total of nineteen guinea pigs given injections of various commercial alum precipitated toxoids or Berna or Witte peptone, eighteen were found sensitive by the Dale test, which indicates a relatively high degree of antigenicity of such proteose containing preparations. Twelve animals similarly given injections of alum precipitated Bacto-peptone did not show evidence of sensitization. Especial interest attaches to commercial tetanus toxoid 4, which had not given definitely positive reactions in the passive transfers to human skin with G. C. serum 1 (table 1, site 15). Of six guinea pigs given injections of tetanus toxoid 4, none were sensitive to the proteose preparations but two were found sensitive to tetanus toxoid 4 and to the broth filtrate of a strain of Clostridium tetani (T. S. 40) which produces no toxin. Since twelve other animals had consecutively shown no sensitization to Bacto-peptone it is possible that these animals were reactive to the bacterial products in tetanus toxoid 4 and T. S. 40.

### IMPORTANCE OF THIS SENSITIZATION IN MAN

The frequency and duration and therefore the importance of such sensitizations in man as recorded here has not been determined. Of a total of about twenty-five reinjections of tetanus toxoid at an interval of from two to four months after the first injection we have encountered four instances of induced sensitization with but one reaction of serious proportions. In a second case (B. H.) the cutaneous test preliminary to the second injection of tetanus toxoid was so positive that the dose was not then given. The passive transfer test with the serum was negative. Six months later the subject was retested; the reaction was nega-

8. Fink, E. B.: The Antigenic Properties of Proteoses, J. Infect. Dis. 25:97, 1919.
9. Egg white.
10. Gay, Frederick P., and others: Agents of Disease and Host Resistance, Baltimore, Charles C. Thomas, Publisher, 1935, p. 335.
11. Zinsser, Hans; Enders, John F., and Fothergill, Le Roy D.: Immunity Principles and Application in Medicine and Public Health, ed. 5, New York, Macmillan Company, 1939, p. 42.
12. Wells, H. Gideon: The Chemical Aspects of Immunity, New York, Chemical Catalog Company, 1929, p. 33.

tive, and the toxoid injection was given cautiously with no untoward results. Another subject (A. K.) was given the first dose of tetanus toxoid June 17, 1938, without local reaction. September 27 the second dose produced immediately a very marked local swelling with itching lasting twenty-four hours. The cutaneous test with tetanus toxoid 1:10 eight months after this second dose showed a marked urticarial wheal in five minutes. Passive transfer test with the serum then obtained was weakly positive. The serum of a fourth subject (D. Y.), who had had two toxoid injections with no reactions, was being checked by passive transfer four months after the second dose. A positive reaction was obtained to the original toxoid and to the Berna peptone but, in contrast to the result with patient G. C., not to the Witte peptone. This led to the following experiment, in which we compared by neutralization test the D. Y. serum with G. C. serum 2 in the same normal subject:

D. Y. serum and G. C. serum 2 were mixed in separate test tubes with equal amounts of Berna and of Witte peptone of the strengths stipulated in table 3. To the two serums were also added in separate tubes equal amounts of physiologic solution of sodium chloride for a control. One-tenth cc. of each mixture was injected in a site in a normal subject. The sites were marked and after a lapse of forty-eight hours they were tested; the results are shown in table 3.

This table shows that D. Y. serum did not react (site 3) to Witte but that it did (site 6) to Berna peptone. D. Y. serum was neutralized by sufficient Berna peptone and did not react on retest with Berna peptone (site 2). Furthermore, Witte peptone did not neutralize D. Y. serum against Berna peptone (site 5). With G. C. serum 2, however, the tests with Witte and Berna peptones (sites 9 and 12) were both positive and the Witte peptone had neutralized to the Berna test (sites 10 and 11). Interest attaches to this because both these patients received commercial tetanus toxoid 1 containing Berna peptone for their immunizing doses, and yet one patient (D. Y.) was found sensitive to Berna peptone alone whereas the other patient (G. C.) was sensitive to both "peptones."

Such vagaries of sensitization are well recognized, but they add greatly to the difficulties of a solution of the phenomenon. This prompts us to give a brief record of a case of induced sensitization to the bacterial products of Clostridium tetani. While such an occurrence has been recorded for Corynebacterium diphtheriae by Neill [13] and his associates we have found no record in the literature of sensitization to the tetanus protein. Dr. Phillip Cowles gave us the history of this case and the opportunity to test the serum.

A man aged 40 had no personal or family history of allergy. One cc. of alum precipitated tetanus toxoid was given in July and again in September 1934 with no local or general reaction. In July 1935 a scratch test was done on one forearm with the original alum precipitated toxoid controlled with alum precipitated broth on the other forearm. There was no immediate reaction, but on the second day the toxoid site showed considerable induration. A normal subject not previously given an injection of toxoid gave no reaction. From this date to June 1936 occasional scratch and intracutaneous tests were done with various tetanus toxoids and filtered broth cultures, with apparently increasing reactions. In August 1936 0.05 cc. of a commercial plain toxoid was injected, with immediate appearance of an urticarial wheal which subsided in one hour. In twenty-four hours the entire arm was so markedly swollen and indurated that the patient was incapacitated for five days. He has had no tests or injections since that time. Blood was drawn for passive transfer tests March 1, 1939. The serum, designated P. Cl., was compared with G. C. serum 2. On the back of a normal subject six sites were made by the intradermal injection of 0.05 cc. of G. C. serum 2 into each, and the same number of sites were made with the same amount of P. Cl. serum. At the end of forty-eight hours the sites were tested with 0.05 cc. of the various substances recorded in table 4. Readings were made in ten minutes. Control sites were all negative to the test and are not recorded here. It will be observed that G. C.

TABLE 2.—*Neutralization of Antibodies in Vivo*

| G. C. Serum 1 Sites | Tested 48 Hours Later with | Result | Retested Next Day with | Result |
|---|---|---|---|---|
| 1 | Tetanus toxoid 1 diluted 1:100 | +++ | Berna secondary protease, 0.01% | 0 |
| 2 | Berna secondary protease, 0.01% | +++ | Tetanus toxoid 1 diluted 1:100 | 0 |
| 3 | Broth filtrate (T. S. 40) diluted 1:10 | 0 | Tetanus toxoid 1 diluted 1:100 | +++ |
| 4 | Broth filtrate (T. S. 40) diluted 1:10 | 0 | Berna secondary protease, 0.01% | +++ |
| 5 | Bacto-peptone, 0.01% | 0 | Berna peptone, 0.01% | +++ |
| 6 | Berna peptone, 0.01% | +++ | Witte peptone, 0.01% | 0 |
| 7 | Witte peptone, 0.01% | ++++ | Berna peptone, 0.01% | 0 |
| 8 | Berna primary protease, 0.01% | ++ | Berna secondary protease, 0.01% | ± |
| 9 | Berna secondary protease, 0.01% | +++ | Berna primary protease, 0.01% | 0 |

TABLE 3.—*Comparison of D. Y. Serum and G. C. Serum by Neutralization Test*

| Site in Subject | Mixtures Injected | Tested 48 Hours Later with | Result |
|---|---|---|---|
| 1 | D. Y. serum and Berna peptone, 0.001% | Berna peptone, 0.01% | + |
| 2 | D. Y. serum and Berna peptone, 0.01% | Berna peptone, 0.01% | 0 |
| 3 | D. Y. serum and saline solution | Witte peptone, 0.01% | 0 |
| 4 | D. Y. serum and Witte peptone, 0.001% | Berna peptone, 0.01% | +++ |
| 5 | D. Y. serum and Witte peptone, 0.01% | Berna peptone, 0.01% | +++ |
| 6 | D. Y. serum and saline solution | Berna peptone, 0.01% | +++ |
| 7 | G. C. serum 2 and Berna peptone, 0.001% | Berna peptone, 0.01% | + |
| 8 | G. C. serum 2 and Berna peptone, 0.01% | Berna peptone, 0.01% | 0 |
| 9 | G. C. serum 2 and saline solution | Witte peptone, 0.01% | +++ |
| 10 | G. C. serum 2 and Witte peptone, 0.001% | Berna peptone, 0.01% | 0 |
| 11 | G. C. serum 2 and Witte peptone, 0.01% | Berna peptone, 0.01% | 0 |
| 12 | G. C. serum 2 and saline solution | Berna peptone, 0.01% | +++ |

13. Neill, James M., and Fleming, William L.: Studies on Hypersensitiveness to Diphtheria Bacilli: I. An Immediate Skin Reaction Which Can Be Passively Transferred, J. Exper. Med. 44:33 (Jan.) 1929.

serum 2 reacted only in sites 2 and 6, in which the test antigen contained Berna peptone, whereas P. Cl. serum reacted with all of the substances containing bacterial substance, even that containing no toxin (site 7) but did not react with the ingredients of the culture medium alone.

Some idea of the degree and duration of sensitivity induced by the proteose containing tetanus toxoid preparations was obtained by carrying out passive transfer tests with diluted serum. For this purpose we compared G. C. serum 1, G. C. serum 2 and D. Y. serum.

TABLE 4.—*Comparison of P. Cl. Serum with G. C. Serum by Passive Transfer Test*

| Test Antigens | G. C. Serum 2 | | P. Cl. Serum | |
|---|---|---|---|---|
| | Site | Result | Site | Result |
| T. S. 40 diluted 1:100 | 1 | 0 | 7 | ++ |
| Tetanus toxoid 1 diluted 1:100 | 2 | ++ | 8 | + |
| Tetanus toxoid 4 diluted 1:100 | 3 | 0 | 9 | + |
| Bacto-peptone, 0.01% | 4 | 0 | 10 | 0 |
| Beef infusion diluted 1:100 | 5 | 0 | 11 | 0 |
| Berna peptone, 0.001% | 6 | +++ | 12 | 0 |

The sites were made on the back of a normal subject by the injection of 0.1 cc. of serial dilutions of the serum. Two days later the sites were tested by injecting 0.02 cc. of a 0.01 per cent solution of Berna peptone; reactions read in ten minutes are recorded in table 5.

These results showed that the D. Y. serum was relatively weak in sensitizing antibody, a definite reaction being obtained with the 1:10 dilution, whereas G. C. serum showed sensitizing capacity when diluted 100 times. This experiment also showed that patient G. C. had not lost any of his sensitization over the period of approximately four months intervening between the collections of serum 1 and serum 2. Very little that is definite can as yet be said on the question of duration of the sensitivity, once it is established. We have already mentioned that patient B. H., who reacted positively by direct test but whose blood did not transfer the reaction and whose sensitivity therefore was slight, had lost cutaneous reactivity in six months. Patient D. Y. was definitely sensitive four months after his second toxoid injection, and patient G. C. showed no sign of decreasing reactivity four months after the second injection. As to those subjects found sensitive after the second toxoid injection, no information is yet available.

## COMMENT

The real object of this presentation is to acquaint the medical profession with proof of the fact that sensitivity can be induced as a result of the present procedures of active immunization to tetanus. We believe that this occurs more often than present reports indicate. It is by no means, however, our purpose to decry the use of this important therapeutic procedure; we wish rather to make constructive suggestions to increase its usefulness and yet guard against the early difficulties that beset the introduction of antitoxic serums.

The following precautions seem to be indicated: A scratch test should always be made before the second and any later injection of the toxoid preparations, and for purposes of record and comparison it should be done before a first injection. This test is preferably made on the anterior surface of the forearm. The scratch should remove the epidermis without drawing blood. A drop of the toxoid that is to be injected should be placed on the abraded area, lightly rubbed in and allowed to remain fifteen minutes. It is then wiped off. If there is no urticarial wheal and erythema the required injection may be made, but always with the precautions to be given later. If there is a very active wheal and erythema, prudence dictates that the injection should be postponed and the test repeated in from four to six months. If the wheal is slight or moderate one may proceed, using first 0.2 cc. of a 1:10 dilution of the toxoid. If no general reaction occurs in twenty minutes, give 0.5 cc. of a 1:10 dilution; after waiting again twenty minutes, 0.1 cc. of the concentrated toxoid, and so proceed gradually and cautiously until the required dose of from 0.5 to 1 cc., depending on the particular directions, has been given. Under all circumstances, with any dose, the patient must be kept under observation for at least one-half hour, for any reaction of serious import will begin within this time. Following the directions originally given by one of us [14] the physician should always have close at hand a bottle of epinephrine diluted 1:1,000, a sterile hypodermic syringe and a tourniquet. If there is any evidence of general reaction such as itching palms, general pruritus, erythema or urticaria, cough or a sense of pressure in the chest, the tourniquet should be tightly applied above the injection site and epinephrine should be administered in doses of from 0.5 to 1 cc. and the procedure repeated as indicated. It is better to give the toxoid injection in the arm, as the tourniquet may be applied more effectively.

One further suggestion may be made to the research departments of pharmaceutic houses producing tetanus toxoid and to bacteriologists in general. Some culture medium should be sought that does not contain such an antigenic substance as proteose and yet will permit a toxin production of high titer. Such a synthetic medium as that recently worked out for the production of diphtheria [15] toxin would undoubtedly avoid many of the difficulties and dangers.

TABLE 5.—*Comparison of Three Serums by Passive Transfer Tests*

| Serum Dilution | G. C. Serum 1 | | G. C. Serum 2 | | D. Y. Serum | |
|---|---|---|---|---|---|---|
| | Site* | Result | Site* | Result | Site* | Result |
| Concentrated | 1 | ++++ | 6 | ++++ | 11 | +++ |
| 1:10 | 2 | +++ | 7 | +++ | 12 | + |
| 1:30 | 3 | ++ | 8 | ++ | 13 | ± |
| 1:100 | 4 | + | 9 | + | 14 | 0 |
| 1:300 | 5 | 0 | 10 | 0 | | |

* Sites were made by injecting 0.1 cc. of the three serums in the strengths noted. Forty-eight hours later 0.02 cc. of a 0.01 per cent solution of Berna peptone was injected into the sites.

NOTE.—Since this paper was written, two cases have been observed in which a delayed urticaria developed on the second day after an injection of alum precipitated tetanus toxoid. In one case, after the second injection, the urticaria lasted five days; in the other, after the third injection, the urticaria lasted two months. Neither patient had had urticaria previously or had any untoward reaction from the first injection of toxoid. Neither case showed any significant skin test reaction to the toxoid (1:10) before or after the therapeutic injection.

14. Cooke, Robert A.: On Constitutional Reactions: The Dangers of the Diagnostic Cutaneous Test and Therapeutic Injection of Allergens, J. Immunol. 7:119 (March) 1922.

15. Pappenheimer, A. M., Jr.; Mueller, J. H., and Cohen, Sidney: Production of Potent Diphtherial Toxin on a Medium of Chemically Defined Composition, Proc. Soc. Exper. Biol. & Med. 38:795 (June) 1937.

# POTASSIUM CHLORIDE IN ALLERGIC DISORDERS

## A CLINICAL STUDY

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By reasoning from different premises, diametrically opposite conclusions can be drawn regarding the possible role of sodium and of potassium therapy in allergic disorders. Likewise, diametrically opposite results have been claimed for the use of these substances in the treatment of allergy. The present report represents an effort to evaluate the therapeutic claims for these ions by means of a critical analysis of published reports, a search for possible explanations of the contradictory results obtained by different workers and a study of the effects of potassium therapy in which the clinical results are compared with sodium and potassium concentrations in the blood serum before and after treatment.

Because of certain analogies between the allergic state and Addison's disease, the Pottengers [1] treated a group of allergic patients with whole adrenal substance and epinephrine. Sodium chloride was added in amounts of from 9 to 18 Gm. daily. All three substances were given orally. Prickman and Koelsche [2] gave adrenal cortex extract intravenously and increased the intake of sodium chloride in the diet "to the limit of tolerance." Fineman,[3] Barbour,[4] and Wilmer and Miller [5] gave adrenal cortex but no added sodium chloride. All except Prickman and Koelsche reported fair to excellent results. Prickman and Koelsche observed no effects from the medication. On the other hand, Stoesser and Cook [6] reported that in children a high sodium chloride intake increased asthmatic symptoms. They gave no cortical extract.

On the assumption that certain allergic disturbances are but a form of edema and that they might therefore respond to treatment which is sometimes effective in the management of other forms of edema, potassium salts with or without the restriction of sodium salts have been used. Presumptive evidence against the possible beneficial effect of potassium administration to allergic patients might be assumed from the work of Feldberg and Guimarais,[7] who reported in 1936 that potassium causes the release of acetylcholine. In 1937 Wenner and Buhrmester [8] reported a marked increase in the serum potassium of rabbits during anaphylactic shock.

In 1932 one of us (G. F. H.) used a salt-poor diet with added potassium chloride in a small group of patients (five) with chronic urticaria at the University of Chicago Clinics. No favorable results occurred and the work was not reported. In 1938 Rusk and Kenamore [9] reported six cases of urticaria treated with high protein, low sodium, acid-ash diet. In five of the six cases from 4 to 6 Gm. of potassium chloride was added daily. All six patients were relieved. Following the appearance of this article, another small group of urticaria patients (four) was treated in this manner by one of us (G. F. H.), with negative results, as before. Cohen [10] reported eight cases of urticaria treated in the same way. Six of these patients were no better and two were worse. The medication of one of the latter had to be discontinued because of severe gastrointestinal cramps.

In 1938 Stoesser and Cook,[6] who had found that a diet high in sodium chloride caused an increase in the asthmatic symptoms of children, treated four patients with a low salt diet and artificial fever and two others with low salt diet alone. In five cases complete remission occurred, and in the sixth case there was a striking decrease in the number of attacks. All six patients experienced a return of asthma when sodium chloride in amounts of from 1 to 20 Gm. daily was added to the diet. In four other cases in which remissions did not occur on a low sodium chloride intake from 6 to 10 Gm. of potassium chloride daily was added. In the milder cases there was improvement but in the others no change occurred. However, prompt improvement followed when the potassium chloride was discontinued. By the administration of pitressin, which increases the output of sodium chloride, they found that there was a reduction in the number and severity of asthmatic seizures both during and after the antidiuretic period and concluded therefore that the improvement was not due to dehydration but to loss of sodium ions.

In December 1938 Bloom [11] reported on the use of potassium salts in hay fever. In twenty-three cases of hay fever and in six cases of hay fever and asthma, from 50 to 100 per cent relief was obtained from doses of 1 Gm. daily. Relief was observed in from a few minutes to one-half hour after the ingestion of the 5 grain (0.3 Gm.) capsule. No failures were reported among the hay fever patients. In ten cases of asthma there was no benefit. Three patients with urticaria, two with eczema and three with chronic sinusitis responded favorably, whereas only one of three patients with migraine was benefited.

In June 1939 Rusk, Weichselbaum and Somogyi,[12] in an article on changes in the serum potassium in certain allergic states, reported that some patients with urticaria and asthma are relieved by potassium chloride therapy and others are not. In August 1939 Abt [13] reported twenty-seven cases of hay fever, asthma, allergic rhinitis and chronic sinusitis in which relief was obtained in from one to five days by 1 to 5 grains (0.06 to 0.3 Gm.) of potassium chloride three times a day. Apparently the sodium chloride intake was limited also. It should be noted that this work was done

From the Rees-Stealy Medical Research Fund.

1. Pottenger, F. J., Jr.; Pottenger, R. T., and Pottenger, F. M.: The Treatment of Asthma with Special Reference to Oral Use of Adrenal Hormones and Sodium Chloride, California & West. Med. **43**: 10-13 (July) 1935.

2. Prickman, L. E., and Koelsche, G. A.: Observations on Treatment of Asthma and Related Conditions with Suprarenal Cortical Extract (Cortin), J. Allergy **9**: 158-165 (Jan.) 1938.

3. Fineman, A. H.: Use of Suprarenal Cortex in the Treatment of Bronchial Asthma, J. Allergy **4**: 182-190 (March) 1933.

4. Barbour, Orville: Treatment of Asthma with Whole Suprarenal Gland: Preliminary Report, Arch. Pediat. **53**: 203-209 (March) 1936.

5. Wilmer, H. B., and Miller, M. M.: Use of Adrenal Cortical Hormone in Treatment of Allergic Manifestations, J. Allergy **8**: 77-78 (Nov.) 1936.

6. Stoesser, A. V., and Cook, M. M.: Possible Relation Between Electrolyte Balance and Bronchial Asthma, Am. J. Dis. Child. **56**: 943-944 (Oct.) 1938.

7. Feldberg, W., and Guimarais, J. A.: Liberation of Acetylcholine by Potassium, J. Physiol. **86**: 306-314 (March 9) 1936.

8. Wenner, W. F., and Buhrmester, Catherine C.: Potassium and Acetylcholine of the Blood of Rabbits in Anaphylactic Shock, J. Allergy **9**: 85-87 (Nov.) 1937.

9. Rusk, H. A., and Kenamore, B. D.: Urticaria—New Therapeutic Approach, Ann. Int. Med. **11**: 1838-1844 (April) 1938.

10. Cohen, A. E.: The Treatment of Chronic Urticaria with High Protein, Low Sodium, Acid-Ash Diet, with Added Potassium Chloride, J. Allergy **10**: 61-63 (Nov.) 1938.

11. Bloom, Benson: The Use of Potassium Salts in Hay Fever; Preliminary Report, J. A. M. A. **111**: 2281-2283 (Dec. 17) 1938.

12. Rusk, H. A.; Weichselbaum, T. E., and Somogyi, Michael: Changes in Serum Potassium in Certain Allergic States, J. A. M. A. **112**: 2395-2398 (June 10) 1939.

13. Abt, A. F.: Note on Oral Administration of Potassium Chloride in the Treatment of Hay Fever, Nasal Allergy, Asthma and Sinusitis, Am. J. M. Sc. **198**: 229-231 (Aug.) 1939.

in Chicago and that treatment in all these cases was begun on or after Oct. 21, 1938, so that it is highly improbable that any of these patients were suffering from true pollinosis at the time the study was made.

In a communication to THE JOURNAL Engelsher [14] reported sixty-four cases of tree and grass pollinosis treated with 1 Gm. daily of potassium chloride. More season of 1939. The pertinent data regarding each patient and the results obtained are summarized in the accompanying table.

In the earlier cases potassium chloride was administered as follows: The measured amount of potassium chloride was placed in an individual salt cellar and used *ad libitum* at the table in place of sodium chloride. At

*Summary of*

| | | | | | Severity According to | | | Treatment | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Patient | Age | Family History | Type of Allergy | Duration | Tests | Symptoms | Nasal Smear Eosinophils | Potassium Chloride, Gm. Daily | Duration, Days | Sodium Chloride Restriction | Other |
| 1 | 86 | ..... | Vasomotor rhinitis | 6 yrs. | .. | +++ | 60% | 3 | 7 | Yes | None |
| 2 | 25 | Eczema | Eczema, hay fever | 25 yrs. | ++ | +++, + | .... | 2 | 14 | Yes | Diet, pollen |
| 3 | 68 | ..... | Urticaria | 2 yrs. | .. | +++ | .... | 4 | 7 | Yes | Epinephrine, p. r. n. |
| 4 | 31 | Positive | Vasomotor rhinitis, migraine | 4 yrs. | + — | ++ | 30% | 3 | 7 | Yes | House dust |
| 5 | 27 | Positive | Hay fever | 12 yrs. | +++ | ++ | 75% | 2 | 42 | Yes | Pollen, house dust |
| 6 | 36 | Negative | Hay fever | 7 yrs. | +++ | ++ | .... | 2 | 21 | Yes | Pollen, house dust |
| 7 | 35 | Negative | Hay fever | 2 yrs. | ++ | ++ | 40% | 2 | 7 | Yes | None |
| 8 | 34 | Positive | Hay fever | 5 yrs. | ++ | ++ | .... | 2 | 21 | No | Pollen |
| 9 | 46 | Positive | Vasomotor rhinitis | 2 yrs. | + | + | .... | 2 | 14 | Yes | None |
| 10 | 52 | Positive | Asthma, hay fever | 7 yrs. | + | ++, ++++ | 80% | 2 | 14 | Yes | House dust |
| 11 | 30 | Positive | Hay fever, migraine | 10 yrs. | ++ | ++, +++ | .... | 2 | 4 | Yes | Pollen |
| 12 | 35 | Negative | Eczema, migraine, hay fever | 18 yrs. | ++ | +++, +++, ++ | .... | 3 | 14 | Yes | Pollen, diet, house dust |
| 13 | 35 | Negative | Exfoliative dermatitis | 1 mo. | .. | ++++ | .... | 3 | 7 | Yes | Sodium thiosulfate |
| 14 | 36 | Positive | Hay fever, asthma | Lifelong | ++++ | ++++ +++ | .... | 3 | 7 | Yes | None |
| 15 | 12 | Negative | Asthma, hay fever | Lifelong | + | ++ | .... | 1 | 60 | No | Pollen, house dust |
| 16 | 40 | Negative | Hay fever, asthma | 25 yrs. | +++ | +++, + | .... | 2 | 14 | Yes | Pollen |
| 17 | 30 | Positive | Hay fever | 2 seasons | ++++ | ++++ | .... | 3 | 20 | Yes | None |
| 18 | 29 | Negative | Hay fever | 6 days | ++ | ++++ | Unsatisfactory | 1 | 16 | No | None |
| 19 | 26 | ..... | Hay fever | Since childhood | ++ | ++ | 30% | 1 | 21 | No | Pollen |
| 20 | 68 | Negative | Hay fever, asthma | 8 yrs. | ++++ | +++, + | Unsatisfactory | 1 | 7 | No | Pollen |
| 21 | 39 | Positive | Hay fever | 10 yrs. | ++++ | +++ | 10% | 1 | 8 | No | None |
| 22 | 42 | Positive | Vasomotor rhinitis | 6 yrs. | + — | ++ | .... | 1 | 7 | No | Endocrine |
| 23 | 45 | ..... | Hay fever | 10 yrs. | + | ++ | .... | 1 | 21 | No | Pollen |
| 24 | 19 | Positive | Hay fever | 10 yrs. | ++++ | ++ | .... | 1 | 14 | No | None |
| 25 | 43 | Positive | Hay fever | 10 yrs. | ++++ | ++++ | 80% | 2 | 4 | No | None |
| 26 | 40 | Positive | Hay fever, asthma | 11 yrs. | ++ | ++ | 70% | 2 | 5 | No | Pollen |
| 27 | 30 | Negative | Hay fever | 3 wks. | ++ | +++ | .... | 2 | 8 | No | None |
| 28 | 44 | Positive | Gastrointestinal allergy, hay fever | 7 yrs. | + — | ++, + | 90% | 2 | 21 | No | None |
| 29 | 18 | Positive | Hay fever | 6 mos. | ++++ | ++++ | 50% | 2 | 4 | No | None |
| 30 | 23 | Positive | Hay fever (pregnant) | 10 yrs. | ++ | ++++ | 75% | 2 | 8 | No | None |
| 31 | 28 | Positive | Gastrointestinal allergy, hay fever | 10 yrs. | ++ | ++, +++ | 60% | 3 | 5 | Yes | Pollen, diet |
| 32 | 36 | Positive | Hay fever, urticaria | 15 yrs. | +++ | ++, ++ | 40% | 3 | 6 | Yes | None |
| 33 | 5 | Negative | Hay fever, asthma | 2 yrs. | + | ++ | .... | 0.6 | 21 | No | Pollen |
| 34 | 20 | Negative | Urticaria | 1 mo. | .. | +++ | .... | 3 | 7 | Yes | None |
| 35 | 20 | Positive | Asthma | 16 yrs. | ++ | ++ | 60% | 1 | 7 | Yes | Pollen, house dust |
| 36 | 40 | ..... | Urticaria | 6 days | .. | +++ | .... | 2 | 5 | Yes | None |
| 37 | 69 | Positive | Asthma | 12 yrs. | + | ++ | .... | 3 | 9 | Yes | None |
| 38 | 25 | Negative | Vasomotor rhinitis, (pregnant) | 2 mo. | .. | +++ | 80% | 1 | 7 | No | None |
| 39 | 8 | Positive | Hay fever | 1 mo. | .. | ++ | 90% | 0.33 | 30 | No | Pollen |
| 40 | 13 | Positive | Hay fever, asthma | 12 yrs. | +++ | ++, ++ | .... | ? | 30 | Yes | Pollen, house dust |

than half of these were not affected and, with one or two exceptions, the patients who were relieved reported greater relief from acetylsalicylic acid.

## CLINICAL STUDY

The present study of the effect of potassium therapy clinically and on the blood serum of allergic patients was carried out during the tree and grass hay fever

the end of the day any that remained in the salt cellar was taken with water. Thus the sodium chloride intake was restricted and the potassium chloride intake was increased. The prescription was given with the simple comment that highly favorable results had been reported in the medical literature and that it could do no possible harm.

We believe, therefore, that, if anything, the patient was prejudiced in favor of this medication rather than against it. Early in the study it became apparent that

14. Engelsher, D. L.: Potassium Chloride in Allergy, J. A. M. A. **113**: 961 (Sept. 2) 1939.

we were not obtaining the results that were reported by Bloom and by Abt. Therefore, although the change did not seem logical, we adopted their method of therapy. A 5 grain capsule of potassium chloride was given with each meal and sodium chloride was not restricted. Those who experienced gastrointestinal irritation were asked to sprinkle the powder on their medication instituted simultaneously with the potassium chloride. In eighteen cases a serum sodium determination was made before and after potassium chloride therapy by the method of Butler and Tuthill,[15] and in fifteen of these the serum potassium determined before and after medication by the method of Shohl and Bennett.[16]

*Observations*

| Patient | Results: Blood Serum | | | | Clinical Results |
|---|---|---|---|---|---|
| | Sodium | | Potassium | | |
| | Before | After | Before | After | |
| 1 | .... | .... | .... | .... | No relief |
| 2 | .... | .... | .... | .... | No relief from eczema; hay fever under control at time of trial |
| 3 | .... | .... | .... | .... | No relief (low sodium, high potassium, acid-ash diet) |
| 4 | .... | .... | .... | .... | No relief |
| 5 | 324 | 327 | .... | .... | No relief (relief from nasal cautery, also from nitrohydrochloric acid) |
| 6 | 329 | 329 | 25.7 | 26.1 | Definitely worse; definite relief from three-eighths grain phenyl-propanol-amine |
| 7 | .... | .... | .... | .... | No relief; excellent relief from three-eighths grain phenyl-propanol-amine |
| 8 | .... | .... | .... | .... | No relief; subsequent relief from pollen injections |
| 9 | .... | .... | .... | .... | No relief |
| 10 | 325 | 312 | .... | .... | No change in asthma; hay fever: subjectively slightly better; objectively, no change |
| 11 | .... | .... | .... | .... | No relief (cathartic and nauseant); relief from phenyl-propanol-amine; attack of migraine with each attempt to take potassium chloride |
| 12 | 325 | 324 | .... | .... | No relief |
| 13 | .... | .... | .... | .... | Vomited with each dose; abandoned attempt (blood eosinophils, 8%); no change in skin |
| 14 | .... | .... | .... | .... | No relief; good results with pollen later |
| 15 | .... | .... | .... | .... | Questionable |
| 16 | .... | .... | .... | .... | No relief; good results with pollen later |
| 17 | 337 | 336 | 25.3 | 29.7 | No relief; definite relief from three-eighths grain phenyl-propanol-amine, excellent result with oral pollen therapy |
| 18 | 329 | 325 | 22.9 | 16.8 | Definite relief 1 hour after ingestion; superior to three-eighths grain phenyl-propanol-amine; good results when potassium chloride was resumed |
| 19 | .... | .... | .... | .... | Very questionable |
| 20 | 342 | 331 | 24.0 | 25.1 | No relief; good results with pollen injections |
| 21 | .... | .... | .... | .... | No relief; excellent results with pollen injections |
| 22 | .... | .... | .... | .... | No relief; relieved by three-eighths grain phenyl-propanol-amine |
| 23 | .... | .... | .... | .... | No relief |
| 24 | 335 | 330 | 27.4 | 19.1 | No relief; good results previous 3 years with pollen injections |
| 25 | 331 | 328 | 23.3 | 19.7 | Relieved; but improvement was maintained after potassium chloride was discontinued |
| 26 | 322 | 325 | 27.1 | 21.5 | No relief; marked abdominal cramps; relief from three-eighths grain phenyl-propanol-amine |
| 27 | 317 | 340 | 19.3 | 18.4 | Improved; but no change when potassium chloride was discontinued |
| 28 | 338 | 322 | 18.2 | 18.8 | No relief |
| 29 | .... | .... | .... | .... | No relief; definite relief from three-eighths grain phenyl-propanol-amine; also from amphetamine inhaler |
| 30 | .... | .... | .... | .... | Relief after first dose; none thereafter; marked intestinal irritation |
| 31 | .... | .... | .... | .... | No relief; marked gastrointestinal irritation |
| 32 | 339 | 321 | 16.4 | 19.1 | No relief; definite relief from three-eighths grain phenyl-propanol-amine |
| 33 | .... | .... | .... | .... | Relieved (after stopping potassium chloride nose said to be excessively dry) |
| 34 | 348 | 331 | 25.6 | 21.8 | No relief; relief from food restriction |
| 35 | 324 | 325 | 22.6 | 22.2 | No relief; nausea and vomiting from 2 Gm. daily; relief from ephedrine |
| 36 | 318 | 322 | 21.2 | 18.1 | Relieved in 1 hour after first dose of 2 Gm.; however, no return of urticaria after discontinuing potassium chloride |
| 37 | 336<br>318 | 330<br>326 | 24.0<br>25.5 | 19.4<br>17.9 | No relief; nausea |
| 38 | .... | .... | .... | .... | No relief |
| 39 | .... | .... | .... | .... | Relieved; no change after discontinuing potassium chloride |
| 40 | .... | .... | .... | .... | No relief |

food or dissolve it in a glass of water. There was no improvement in our results and we reverted to our original method of administration. Since our results were essentially negative, a period of inert medication was not used as a control; however, whenever possible, a mild but definitely active drug was given for a control period.

Some patients were already on perennial hyposensitization treatment. No patient was included in this series, however, who had not reached a plateau so far as symptoms were concerned. In no case was other

The mean value for serum sodium before administration of potassium chloride was 330.1 mg. per hundred cubic centimeters and the mean value after the potassium medication was 326.9 mg. It will be seen that in five cases the serum sodium rose slightly, in eleven cases it fell and in one case there was no change. Although

15. Butler, A. M., and Tuthill, E.: An Application of the Uranyl Zinc Acetate Method for the Determination of Sodium in Biological Material, J. Biol. Chem. **93**: 171, 1931.

16. Shohl, A. T., and Bennett, H. B.: A Micro Method for the Determination of Potassium as Iodoplatinate, J. Biol. Chem. **78**: 643, 1928.

there was a slight tendency toward lowering of the sodium values after the administration of potassium chloride, this change is not statistically significant.

The mean value of the serum potassium before administration of potassium chloride was 23.3 mg. per hundred cubic centimeters and the mean value after medication was 21 mg. In five cases the serum potassium rose and in ten it fell. The series is not large enough for this apparent difference to be statistically significant, although the results apparently conform, at least in ten of the fifteen cases, with the results of Rusk, Weichselbaum and Smogyi.[12] However, since approximately 95 per cent of the blood potassium is carried in the cells, it is well not to attach too great significance to slight changes in serum potassium values. A slight degree of diffusion from the cells could greatly modify the serum values for this ion. We attempted to minimize this possibility by centrifuging the blood samples within thirty minutes of venipuncture.

In one case the serum concentration of both ions was determined immediately before and thirty and ninety minutes after the ingestion of 2.5 Gm. of potassium chloride in the fasting state. No significant change in the concentrations of either ion occurred.

In thirteen cases the blood cholesterol was determined before potassium chloride therapy and in five of these the determination was repeated at the termination of this therapy. No significant change was noted.

In this group of forty cases there were twenty-six of hay fever, five of vasomotor rhinitis, seven of bronchial asthma, two of migraine, two of gastrointestinal allergy, five of urticaria and one of exfoliative dermatitis. The clinical results may be summarized as follows: definite relief, one case; apparent improvement which, however, was maintained after medication was discontinued, four cases; questionable improvement, five cases; symptoms increased, two cases, and no effect, twenty-eight cases.

Six patients reported marked gastrointestinal discomfort; three of them were able to continue by modifying the method of administration of potassium chloride, whereas the other three refused or were unable to continue.

## COMMENT

After our failure to duplicate the results of Bloom and of Abt in our initial cases, our chief objective in this work has been to discover if possible the factor or factors responsible for these divergent results. Condensed data regarding these patients have been given in the table in the hope that some one may discover some essential difference in the procedure, in the type of patient treated or in some other factor which might explain these apparently contradictory results. Reports from localities as different as Tucson and Chicago are favorable and from localities as far removed and different as New York and San Diego, are unfavorable.

In our series only one patient apparently experienced clearcut relief from potassium chloride therapy. Examination of the data regarding this patient reveals only one possible essential difference, namely that this was his first attack and that the symptoms had been present for only six days previous to the administration of potassium chloride. In one case of urticaria in which symptoms had been present for only five days prompt relief was experienced after the first dose of medication, but when potassium chloride was discontinued four days later no recurrence of symptoms occurred. However, there is no indication in the articles of Bloom and of Abt that treatment was confined to early cases, although most of Abt's patients were children.

An essential point is the question of appropriate dosage. Present experimental evidence indicates that the potassium of food is as readily available for absorption as is the potassium in a soluble inorganic salt. Wilder and his associates[17] state that their diets for patients with Addison's disease, which are especially arranged for low potassium content, contain approximately 1.6 Gm. of potassium daily. This is equivalent to 3 Gm. of potassium chloride. Sherman[18] gives 3.39 Gm. of potassium (the equivalent of 6.5 Gm. of potassium chloride) a day as the average of 100 American dietaries, with variations of from 1.43 to 6.56 Gm. a day. Sister Mary Victor[19] gives from 4 to 5 Gm. a day as the potassium content of the average normal diet but states that this amount may be more than doubled by a liberal use of foods rich in potassium. Five Gm. of potassium is equivalent to 9.5 Gm. of potassium chloride. It will be seen that, if this value is doubled, the addition of 1 Gm. of potassium chloride a day modifies the potassium intake by slightly more than 5 per cent. On 3 Gm. a day the patient's intake would be modified by 33⅓ per cent. It is rather surprising that dramatic therapeutic results have occurred from a procedure which alters the potassium intake from 5 to 33⅓ per cent, whereas it is conceivable that the potassium intake could be modified as much as 400 per cent by inadvertent dietary selection. Although this would be an extreme variation, it is quite probable that daily variations of at least 50 per cent are not at all unusual. Nevertheless the favorable results of Bloom and of Abt followed the relatively small dose of 1 Gm. daily. It is true that the dosage of potassium chloride is limited by the gastrointestinal tolerance of the patient. However, Rusk and Kenamore gave from 4 to 6 Gm. daily. Cohen gave the same amount. Stoesser and Cook were apparently able to give from 6 to 10 Gm. to children. The logical procedure would certainly seem to be to administer large doses of potassium chloride and to restrict the sodium intake even though favorable results have been reported with much smaller doses of potassium chloride.

Alexander[20] has stated that potassium may stimulate both cholinergic and adrenergic fibers. It may be that in some way some factor so far overlooked which has influenced the effect of the potassium on one or the other of these groups of fibers has entered into the various studies of this question.

Feinberg and Bernstein[21] comment that sometimes any alteration in the allergic patient's physiology will result in temporary benefit.

Possibly a more logical hypothesis would be that the potassium and/or sodium intake of patients in different localities varies greatly, regardless of the amount administered as such in the form of medication. A chemical analysis of the tap water in San Diego revealed about 1 grain (67 mg.) of sodium chloride and one-fifth grain (13 mg.) of potassium chloride per liter of water. Thus the total potassium intake from this source is not sufficient to modify results either way. Another possibility is the variation in the potassium content of fruits and vegetables grown on land to which large amounts of potassium-containing fertilizer is added. It should be

17. Wilder, R. M.; Snell, A. M.; Kepler, E. J.; Rynearson, E. H.; Adams, Mildred, and Kendall, E. C.: Control of Addison's Disease with a Diet Restricted in Potassium: A Clinical Study, Proc. Staff Meet., Mayo Clin. 13:273-283 (April 29) 1936.
18. Sherman, H. C.: Chemistry of Food and Nutrition, ed. 5, New York, Macmillan Company, 1937, p. 245.
19. Mary Victor, Sister: A Diet Restricted in Potassium, J. Am. Dietet. A. 14:759-772 (Dec.) 1938.
20. Alexander, H. L., in discussion on Wenner and Buhrmeister.[9]
21. Feinberg, S. M., and Bernstein, T. B.: Asthma and Hay Fever; Review of Literature for 1938, J. Allergy 10:283-307 (March) 1939.

noted, however, that the foods relatively high in potassium are soups, gravies, meats, whole grain cereal products and certain condiments and not, on the whole, fruits and vegetables.

Perhaps it is the large day-to-day variation in the potassium content of the diet which has produced such apparently contradictory results in potassium chloride therapy. This may, in fact, account for a part of the apparently erratic daily variations in allergic disorders.

SUMMARY

A review of the various hypotheses on which sodium and potassium therapy of allergy has been based, and a critical study of the divergent results obtained by such therapy by different workers, fail to reveal any definite reason for the variance of published results.

In a clinical study of forty patients with miscellaneous forms of allergy, chiefly hay fever, who were treated with potassium chloride, negative or questionable results were obtained in all but one case. The serum sodium was determined before and after the medication in eighteen of these patients. In fifteen of these the serum potassium was also determined. No significant alteration in the concentration of either ion was found.

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## Clinical Notes, Suggestions and New Instruments

### TREATMENT OF TRAUMATIC THROMBOSIS OF THE BRACHIAL ARTERY BY INTERMITTENT VENOUS OCCLUSION

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Early descriptions of a "reactive hyperemia" are found in the writings of Cohnheim[1] and Lister.[2] This phenomenon displays itself in a bright blush of the skin with an increased volume of the pulse after an obstruction to the circulation has been released. They believed this reaction to be due to a vasomotor paralysis of the nerves produced by the obstructing tourniquet. This view was proved to be untenable by Bier.[3] He showed that all connections between the limb and the body could be severed excepting the artery itself and the reaction would still occur. He stated that a collateral circulation could be established in areas to which the vessels had been occluded by promoting a reactive hyperemia. Lewis and Grant[4] studied the effects of vascular occlusion and found that there resulted an increase in arterial amplitude following the release of vascular occlusion. They showed that the deep blood vessels as well as those of the skin were affected by this reaction and that the reaction was due to vasodilatation of the arterioles. It was further demonstrated by them that the reaction could be produced by compressing only the veins. Following this lead, Collens and Wilensky[5] used intermittent venous occlusion for the treatment of thrombo-angiitis obliterans, arteriosclerosis obliterans and indolent ulcers with gratifying results. Venous occlusion was accomplished by placing a pneumatic cuff around the proximal portion of the affected extremity. The cuff was inflated to a pressure approximating the arterial diastolic pressure constricting the venous flow. This pressure (approximately 80 mm. of mercury) was maintained for two minutes and then released for two minutes. This cycle was continuously repeated so that the final result consisted of alternating periods of venous congestion and release of congestion. The period of continuous treatment varied from twenty-four hours to two weeks, depending on the results obtained in each case.

Paine and Levitt[6] have recently reported the use of intermittent venous occlusion in the treatment of thrombophlebitis of the lower extremities. Eleven patients were treated and all showed improvement.

We have recently used this form of therapy on patients with acute traumatic thrombosis of the brachial artery with success. Since no reference can be found in the literature in which such a condition has been managed in this manner, it was thought to be of enough interest to report.

#### REPORT OF A CASE

W. W., a man aged 39, entered the hospital at 10:30 a. m., June 12, 1939, immediately after he had been injured. He had been holding a trunk on the running board of a car with his right arm. A truck collided with the car, crushing the patient's arm. There was complete paralysis and loss of sensation of the right hand and forearm. The radial pulse could be faintly palpated, but comparison with the left radial pulse showed it to be much diminished. The right hand and forearm were warm and of normal color. Approximately 2 inches below the anterior axillary fold there was a ragged laceration which extended diagonally across the anterior medial surface of the upper arm. The skin and biceps brachii muscle were completely separated, exposing the brachial artery, the ulnar and medial nerves, and the basilic vein. All the tissue in this area was contused and ecchymotic. A faint pulsation of the brachial artery could be seen at the time the wound was first examined, but by the time the wound had been thoroughly irrigated with saline solution all pulsation had ceased below a point at which a thrombus could be made out by light palpation. Owing to the crushing injury received by the artery it was deemed inadvisable to remove the thrombus, as it appeared certain that operative trauma would be followed by further thrombus formation. To aid the collateral circulation the basilic vein was ligated with O chromic catgut. A débridement of the wound was done and the tissues were approximated in layers. The arm was placed in flexion and held in this position by a plaster splint. By evening of the same day the hand was pale and cold. No sensation or motion had returned. On the morning of June 13 the hand and forearm were cyanotic; the fingers were stiff and had a cadaveric appearance. About 3 p. m. the patient and his family were advised that he would in all probability lose his forearm and hand. Immediately after this the intermittent venous occlusion was begun. A pneumatic cuff attached to a sphygmomanometer was placed as high as possible on the arm and the pressure in the cuff was raised to 80 mm. of mercury for two minutes, followed by a two minute period of deflation of the cuff. This procedure was carried on continuously until the late morning of June 15. The hand was again examined on the morning of June 14, and although the hand and fingers were dusky the color was somewhat improved. The hand was slightly warmer; the radial pulse was still absent but it appeared that gangrene might be avoided. By that afternoon the hand was definitely improved. The hand was still cold and cyanotic but it seemed to be taking on more of the appearance of a living hand. The cyanosis persisted approximately a week, during which time the patient pumped the sphygmomanometer cuff intermittently every two hours for two minutes to a pressure of 80 mm. of mercury. The patient began having severe pain of the entire arm and hand on June 16. This appeared to be causalgia and for this reason 10 mg. of vitamin $B_1$ was given hypodermically three times a day, without relief.

The patient has been observed over a period of three and a half months at this writing, and the radial pulse has never returned. There was a separation of the biceps muscle with drainage from the wound first noted on the tenth postoperative day. The hand and forearm, however, have assumed a normal color and temperature, and normal function of the hand and forearm is now present.

#### COMMENT

It seemed apparent that this patient was doomed to lose his arm as a result of the injury. The hand and forearm were

From the Thomas-Davis Clinic.

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2. Lister, Joseph: Bull. Acad. de méd. 8:640, 1878.
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4. Lewis, Thomas, and Grant, R. T.: Observations on Reactive Hyperemia in Man, Heart 12:173 (June) 1925.
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cold, cyanotic and pulseless and were growing progressively worse. Intermittent venous occlusion was instituted as a last resort to stimulate any collateral circulation that might exist. After fifteen hours' continuous treatment we were surprised to see the improvement that had occurred. The hand was warmer, and although cyanosis was still present the appearance was more that of a living hand. The sphygmomanometer cuff was placed just above the injured area and it may have been a factor in the later separation of the muscle. It is possible that the arm may have recovered without this type of therapy, but the dramatic response in an ischemic arm which appeared destined for gangrene was most convincing, and we feel that the intermittent venous occlusion was the factor responsible for the improvement.

Although the observation has been made that the reactive hyperemia becomes more pronounced by increasing the environmental temperature (Lewis and Grant), this was thought inadvisable. This premise was based on the work of Allen,[7] which showed that asphyxiated peripheral tissues can survive for longer periods at room temperature than if exposed to elevations of temperature. In fact, according to his experiments we would have been justified in placing the injured arm in ice packs until there was evidence of the presence of collateral circulation.

SUMMARY

In the case of traumatic thrombosis of the brachial artery here presented it seemed apparent that the extremity would be lost, owing to impending gangrene. Marked improvement in the circulation followed the application of intermittent venous occlusion, with recovery of the ischemic extremity.

130 South Scott Street.

## BB SHOT IN THE VERMIFORM APPENDIX

JOHN R. EARL, M.D., ST. PAUL

There are a number of reports of BB shot in the appendix, particularly in the English literature. The finding of one or two shot in the intestinal tract is quite common during the hunting season, but large collections of shot in the appendix are infrequently seen. The following case is reported to illustrate the value of fluoroscopy in addition to x-ray films for the diagnosis of this condition:

Fig. 1.—Specimen removed at operation.

E. O., a man aged 32, was admitted to the hospital because of a severe acute back strain. X-ray examination of the lumbosacral area revealed as an incidental condition in the right lower quadrant a shadow of metallic density which was irregular in outline. The suspected diagnosis of BB shot in the appendix was established by the roentgenologist when he was able to separate the shot by pressure over the appendix during fluoroscopic examination, as shown in figure 2. The patient stated that he had experienced occasional attacks of discomfort over the appendix but that he had never consulted a physician for that complaint. He eats from ten to twenty ducks and pheasants each year. Complete examination of the blood was negative.

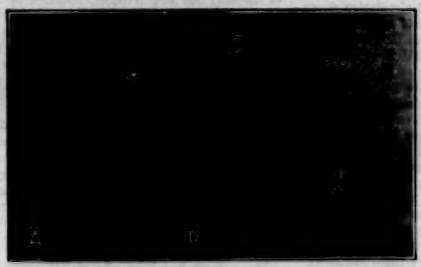


Fig. 2.—Appendical area in *A*, spine roentgenogram, and *B*, with pressure applied under fluoroscopy.

The appendix was removed at operation. It was considerably enlarged and weighed 9.8 Gm., containing thirty-eight number 6 shot and numerous flakes. All the shot had been fired. The wall of the appendix was very thin in three spots, where considerable pressure apparently had been exerted by shot. The patient made an uneventful recovery.

Earl Clinic.

## COMPOUND DISLOCATION OF THE TESTIS

W. E. MILLER, M.D., WHITEVILLE, N. C., AND JACK MICKLEY, M.D., TABOR CITY, N. C.

Compound dislocation of the testis is a term coined by Alyea[1] in 1929 to describe the traumatic extrusion of the testis from the scrotum through the skin. It is an accident of extreme rarity. However, there has been an increased frequency in the past decade, and further incidence may be expected owing to automobile and airplane accidents. The universal causative factor is a terrific blow to the scrotum countersustained by the pelvis.

Alyea was able to find in the literature only three cases, to which he added one of his own. Pomeroy[2] reported a case in 1935. Herbst and Polkey[3] in 1936 cited twenty-seven cases from the literature but unfortunately included avulsions, saber lacerations, operative blunders, gunshot wounds and the like. Careful search of the literature reveals only ninety-seven cases of traumatic dislocation of the normally descended testis of all types, and of these only five seem to be true compound dislocations.

To this number we add the following case:

### REPORT OF CASE

*History.*—C. W., a white man aged 36, was admitted to the Columbus County Hospital Dec. 16, 1939, following an automobile accident, the details of which could not be obtained. However, the ambulance driver related that the automobile which the patient was driving left the highway and ran into a tree. The other occupant of the car was killed instantly. Judging from the physical examination one would surmise that the patient had been thrown astride the gear shift lever.

*Examination.*—The patient was well developed and fairly well nourished, unconscious and in considerable shock, with the odor of alcohol on his breath.

The head had a superficial laceration over the right frontal region about 4 cm. in length. There was slight bleeding from the wound. No depressions of the skull were noted.

The pupils were round, regular, dilated and equal and reacted sluggishly to light.

The canals of the ears were clean. The tympanic membranes were intact and there was no hemorrhage.

There was a compound dislocation of the right testicle. The epididymis was in its normal relation to the testicle. The testicle, epididymis and some 2 cm. of the cord had ruptured through the tunica vaginalis and all covering layers and had erupted through the skin. The opening in the skin was on the right lateral side of the scrotum 3 cm. below the external inguinal ring. The opening measured about 1.5 cm. There was little or no bleeding. There was some ecchymosis of the right side of the scrotum surrounding the laceration. The left testis was in its normal position in the uninjured left side of the scrotum. The penis was normal. There were abrasions over both knees and contusions and abrasions about the left ankle.

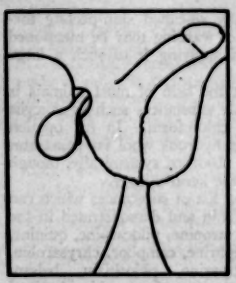
7. Allen, F. M.: Experiments Concerning Ligation and Refrigeration in Relation to Local Intoxication and Infection, Surg., Gynec. & Obst. 68:1047 (June) 1939; Surgical Considerations of Temperature in Ligated Limbs, Am. J. Surg. 46:439 (Sept.) 1939.

1. Alyea, E. P.: Surg., Gynec. & Obst. 49:600 (Nov.) 1929.
2. Pomeroy, E. S.: J. Urol. 34:43 (July) 1935.
3. Herbst, R. H., and Polkey, H. J.: Am. J. Surg. 34:18 (Oct.) 1936.

X-ray examination revealed transverse fractures of the superior and inferior rami of the right pubic bone with very little displacement of the fragments, and a Pott's fracture of the left ankle with slight displacement. These fractures were not diagnosed at first. X-ray films revealed them after the patient regained consciousness and complained of pain at the fracture sites.

*Treatment and Course in the Hospital.*—After about three hours the patient's mind began to clear. He became very restless, complaining of pain in the lower part of the abdomen, pelvic region and left ankle. Because of shock, no attempt was made to reduce the testicle until twenty-four hours had elapsed. During this time it was necessary to administer stimulants; 10 per cent dextrose in physiologic solution of sodium chloride was given intravenously. Catheterization was required for the first twenty-four hours. Only clear urine was obtained. After twenty-four hours the patient's general condition improved.

*Reduction.*—The genitals were prepared by shaving and cleaning with tincture of green soap and water. The scrotal skin about the wound was painted with a germicide and the testicle cleaned with solution of hydrogen peroxide. Metycaine 1 per cent was infiltrated about the margin of the wound and into the cord. An attempt was then made to replace the testicle in its normal position. Difficulty was encountered while an attempt was made to slip the testicle back through the opening and down into the right side of the scrotum. The opening in the skin was large enough but the opening in the other testicular coverings (tunica vaginalis) could not be located. Our first thought was to enlarge the openings to facilitate replacement of the testicle. This, however, was unnecessary.



Sketch of compound dislocation of one testis.

One of us (J. M.) suggested a maneuver which we have not seen described in the literature: First the testicle is pushed through the opening in the skin, then pressed upward to the external inguinal ring, and the last motion is downward to the proper side of the scrotum. These steps were followed and the testicle slid back into its normal position with ease. A rubber tissue drain was placed in the right side of the scrotum. The subcutaneous tissue was closed with No. 1 plain catgut and the skin with interrupted sutures of fine black silk. A dry dressing was applied with light pressure. Following reduction, the patient had no pain in the testicle.

The injury to the patient's head was trivial. The left foot and leg were placed in a plaster cast.

*Convalescence.*—On December 18 a small area of pneumonic consolidation developed in the left lower lobe. December 23 the process was repeated in the right lower lobe. Sulfapyridine therapy resulted in prompt recovery by December 28. Meanwhile the scrotal wound healed rapidly. The drain was removed on the second postoperative day and the sutures on the eleventh. The patient was discharged from the hospital on the thirteenth hospital day, December 28.

One week later he was treated at the hospital for a malarial flare-up. At this time the scrotal wound was entirely healed and the testicle was in good position and not painful. Atrophy was not apparent.

Columbus County Hospital, Whiteville, N. C.

**The Ultimate Meaning of Research.**—The ultimate meaning or purpose of medical research is to rid man of diseases, to protect them from maladies with which they are threatened, to relieve them of discomforts once they are established.—Cohn, Alfred E.: The Meaning of Medical Research, in Landmarks of Medicine, New York, D. Appleton-Century Company, 1939.

## *Special Articles*

# HORMONES AND VITAMINS IN COSMETICS

JOSEPH J. ELLER, M.D.
AND
SHIRLEY WOLFF
NEW YORK

Experiments have demonstrated that androgens and estrogens [1] and certain vitamins [2] are absorbed through the intact skin with the possibility of causing systemic effects similar to those observed after the injection or ingestion of these substances. The percutaneous absorption of estrogens may exert a profound influence on the anterior hypophysis and on the ovaries, producing disturbances in the menstrual cycle and changes in the mammary glands and in the reproductive and genital organs. It has been proved that in animals the sex hormones can induce proliferation of cells [3] in the tissues which they affect, the gradient development of which results frequently in cancer. These reactions indicate a potential danger to normal persons who use cosmetics which contain active therapeutic substances used in the practice of medicine to produce systemic changes.

The use of vitamins in creams, lotions and soaps has caused controversy [4] concerning their efficacy in cosmetic preparations. While it may be true that vitamins A and D can be absorbed through the unbroken skin, there is no conclusive evidence [5] that they affect the local tissues. It is questionable whether the small [6] amount of vitamins that could be absorbed from cosmetics would produce any systemic effects in human beings.

Vitamins in soaps are of questionable value [7] because of the small quantity of vitamins in the soap solution [8] and the brief interval of contact with the skin. It has been mentioned that a residue [9] remains on the skin after rinsing, but the effectiveness of the vitamins that could be absorbed from this source is doubtful.

Hypervitaminoses resulting from overdosage have frequently been reported. Skin manifestations [10] have been observed from the ingestion of vitamins in excessive amounts. Symptoms of vitamin D poisoning [11] have followed the topical application of vitamin D ointment on the skin of normal rabbits.

It is interesting to note the relationship between hormones and vitamins. There is a close chemical structural similarity [12] between the estrus-producing substances derived from the ovarian follicles, the testis hormones, the carcinogenic hydrocarbons, and a whole series of other biologically important substances such as cholesterol, bile acid, ergosterol and vitamin D.

The authors were assisted by Arthur H. Kahn, chemist.

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3. Loeb, Leo: Personal communication to the authors, May 10, 1938.
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5. Bulletin of the Toilet Goods Association, May 7, 1937.
6. The American Perfumer, May 1938.
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9. Durfee, Thomas: Drug Trade News, May 24, 1937.
10. Pfeiffer, F. F.: A Skin Manifestation from the Excessive Administration of Vitamins, J. A. M. A. **102**:533 (Feb. 17) 1934.
11. Gordonoff, T., and Zarafonetis, S.: Arch. f. Hyg. **109**:361 (March) 1933. Manscrips, C.; Dreller, H., and Carter, C. E.: München. med. Wchnschr. **80**:1269 (Aug. 10) 1933.
12. Loeb, Leo: Estrogenic Hormones and Carcinogenesis, chapter XIII, in Glandular Physiology and Therapy, Chicago, American Medical Association, 1935, p. 180.

Regarding this, Murlin[13] states: "We are able to demonstrate startling similarities, not only between the various hormones themselves, but also between hormones and vitamins, structurally and functionally."

The widespread and uncontrolled use of therapeutic agents such as hormones and vitamins in cosmetics makes it necessary to determine their margin of safety and their efficacy when used in this manner.

### PERMEABILITY OF THE SKIN

A review of the literature on absorption reveals a mass of evidence definitely proving that numerous substances when applied to the unbroken skin can be absorbed, producing systemic effects.

It must be understood, however, that penetration into or through the skin can occur without absorption into the circulation. There would be much less confusion in the literature if, when referring to skin absorption, the meaning were more clearly indicated; that is, into the skin or through the skin, with or without absorption into the blood stream.[14]

Over a century ago the absorptivity of the skin was recognized. Mussey[15] in 1809, experimenting on his own skin, proved absorption by substances found in the urine.

In 1901 Reilly,[16] reviewing the literature and adding his observations, emphasized that many medicinal agents applied to the unbroken skin would produce therapeutic effects. He mentioned constitutional effects of belladonna from plasters containing the drug; salivation from mercury inunction; systemic effects from cutaneous applications of pilocarpine mixed with lard, and finding in the urine iodine, salicylic acid, turpentine, guaiacol, creosote and phenol (carbolic acid) resulting from percutaneous absorption. He also mentioned the usefulness of inunction with cod liver oil in scrofulous conditions.

Pels[17] cites Unna, who, more than twenty-five years ago, made studies of the chemistry of the skin and concluded that "certain few solid and liquid substances (caustic acids and alkalis, phenols) as well as all gaseous and vaporous bodies, can penetrate the skin, and contrariwise, all soluble, indifferent substances, such as neutral salts, cannot."

While there may be some controversy[18] concerning the absorption or penetration of ointment bases such as those made of liquid petrolatum, linseed oil, hydrous wool fat, cholesterol, cottonseed oil, lard, almond oil or olive oil, their function as a fixative insures long-lasting contact with the surface to which they are applied, permitting the absorption of chemical substances incorporated in them. Macht's[18] experiments showed that the essential or volatile oils are most readily absorbed through the intact skin. .Cornbleet,[19] in discussing Macht's article, stated that "there is some evidence at the present time that cholesterol and like products are excreted to the surface of the skin and then reabsorbed. In this way, perhaps, many substances are excreted and finally reabsorbed after modification."

In a study of permeability and absorptivity of the skin[19a] we found that: (*a*) fats permeate the skin and do so in a large measure along the hair shafts and into the oil gland ducts; (*b*) liquid fats permeate the skin more rapidly than solid fats; (*c*) animal fats show the greatest depth of penetration, with vegetable fats next and mineral fats least; (*d*) most of the fats show optimum penetration between four and six hours after application. After six hours, the quantity of fat in the deeper tissues appears to diminish.

Deaths have occurred shortly after the absorption of phenol[20] and salicylic acid[21] through the unbroken skin. Iodine[22] poisoning has also been observed following topical applications. These reports attest the rapidity with which certain toxic substances are absorbed percutaneously. Gottlieb and Storey[20] described renal damage following phenol dressings. They mentioned the fact that certain persons may be extremely sensitive to phenol, with violent and even fatal reactions from minute doses shortly after application.

Since the basis of many so-called skin-peeling formulas is phenol, a word of warning may be mentioned regarding the dangers of applying it to such a large area of skin as the face.

Rothman[23] stated that the skin of most animals is permeable by lipoid-soluble substances such as salicylic acid, alcohol, ether and chloroform. In his opinion it is questionable whether hydrous wool fat penetrates the skin sufficiently to be absorbed systemically, though it is quickly absorbed by the keratin layer.

Miyazaki[24] gives a long list of substances which can be absorbed through the skin and demonstrated in the urine, blood and tissues: atropine, pilocarpine, quinine, strychnine, cocaine, epinephrine, camphor, chrysarobin, pyrogallol, phenol, antipyrine, phlorhizin, balsam copaiba, oil of cloves, bergamot, ferric chloride, lead acetate, arsphenamine, bismuth lactate, colloidal sulfur, potassium iodide and salicylic acid. He found that they were more readily absorbed in solution than in an ointment base. He states that the fatty acids and products of saponification do not penetrate the skin and that fats which penetrate do not become saponified in the skin. He believes that the absorption of these substances takes place through the epidermis and not through the sebaceous glands.

According to Bürgi,[25] all medicaments and poisons in a dissolved form can penetrate the skin, and lipoid soluble substances are more penetrating than the water soluble. He points out that certain hormones are lipoid soluble, which he further concludes is not absolutely necessary for percutaneous absorbability.

Perutz[26] stated that the skin is pervious to lipoid soluble substances. He cited Meyer-Overton's lipoid theory that the greater the solubility of a substance in lipoids compared to the solubility in water the more easily absorption takes place.

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19. Cornbleet, Theodore, in discussion on Macht.[18]

19a. Eller, J. J., and Wolff, Shirley: Permeability and Absorptivity of the Skin, Arch. Dermat. & Syph. **40**: 900-920 (Dec.) 1939.
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The permeability of the skin to aqueous solutions of salts was demonstrated by Kahlenberg.[27] Bathing of hands [28] for from two to three hours showed absorption of a 2 per cent potassium iodide solution, proved by substances found in the urine.

Major and Delp [29] concluded that there was absorption of appreciable amounts of insulin through the undamaged skin. Their observations of a series of diabetic patients showed a fall in blood sugar in approximately 50 per cent of the patients. The insulin was applied to the skin of the anterior aspect of the thigh (the area was not shaved) after preliminary treatment with glycerin. They also reported similar results in rabbits. Hermann and Kassowitz [30] proved beyond doubt the permeation of insulin but said that it was questionable whether an exact dose could be given in this manner, and for this reason they recommended subcutaneous injections for clinical use.

Lasareff and his associates [31] applied petroleum, benzine, benzene, ether and acetone to the skin of the ears and paws of rabbits and found that some of these substances were absorbed into the blood stream. Similar results were obtained with benzine and ether in human beings.

Matschak,[32] investigating the percutaneous absorption of salicylic acid and sodium salicylate from stearin ointments, hydrous wool fat and petrolatum, stated that the interrelationship between the lipoids of the skin and the lipoids of the ointment base, and the diffusion of the drugs between these, influenced the rate of absorption. Fuchs [33] applied an ointment containing arsenic for from fourteen to thirty-seven days on the skin of patients suffering from inoperable cancer. Arsenic was demonstrated in the liver, brain, heart, kidneys, spleen, lungs, intestine and gallbladder, and in the bile. Walton and Witherspoon [34] showed the easy permeation, through the skin, of gases such as hydrogen sulfide, carbon dioxide and chlorine. Inunction with oils [35] containing sugars led to an increase of the sugar content in the blood and urine of diabetic and normal persons. Stejskal [36] found lactose percutaneously absorbed in the urine of patients having slight disturbances of carbohydrate metabolism.

Moore, Lamar and Beck,[37] reporting on the effects of androgens and estrogens when applied to surfaces of the skin, stated "there is yet a lack of appreciation of the readiness with which substances are taken up by the skin and become effective in the body."

Hume, Lucas and Smith,[2] eleven years ago, applied irradiated cholesterol to the undamaged skin of rabbits and rats and concluded that sufficient vitamin D was absorbed to prevent rickets.

The following sections give details of recent investigations which prove beyond doubt that certain vitamins and hormones contained in cosmetics can be absorbed through the unbroken skin with effects similar to absorption by other routes.

### ABSORPTION OF ESTROGENIC SUBSTANCES

Zondek [1] in 1929 found that he could induce estrus in a castrated mouse by rubbing a follicular hormone contained in oil or ointment into the shaved skin of its back. To obtain this effect it was necessary to use a quantity seven times greater than that used for subcutaneous injection. More recently, however, he proved that the same amount of the substance absorbed percutaneously can produce results identical to those following injection if applied in a tincture of alcohol, ether or benzene. The more readily the solvent is absorbed through the skin, the more easily does the estrogen exert its effect. His animal experiments proved that the estrogens are readily absorbed from local applications and produce systemic effects. Zondek further demonstrated this in human beings. An alcoholic solution (96 per cent) of estrone was rubbed into the skin of twelve patients having amenorrhea. In eighteen menstrual cycles bleeding was induced ten times, although the mucous membrane did not show the typical picture of the premenstrual phase. Of the eight failures, three of the patients were subsequently treated by injection with good results. Zondek emphasizes that injections of estrogen are not always successful and cites an exemplary case. He finds percutaneous hormone therapy to be simpler and more agreeable to the patient, especially for long-continued treatment.

Silberman, Radman and Abarbanel,[37a] after preliminary studies, feel that the subcutaneous implantation of pellets of crystalline testosterone propionate for menopausal symptoms will eventually supplant the other methods of administering the substance except possibly in mild cases.

Moore, Lamar and Beck,[37] who experimented on rats and guinea pigs with androgens and estrogens, came to the following conclusions:

1. Testosterone and t-propionate applied on the skin as an ointment is readily absorbed and either maintains the accessory reproductive organs of castrate males in a normal reproductive state or stimulates their development precociously in the young, or decidedly above the normal levels in adults. 2. These androgens, so administered, exert effects similar to those obtained following subcutaneous injections. They (*a*) maintain reproductive accessories in castrate males at all ages, (*b*) reconstitute castrated guinea pigs within seven days treatment to a state of producing coagulable ejaculates on electrical stimulation of the head, (*c*) produce injuries to testes of normal growing young male rats. 3. Face cream (stated to contain estradiol), sold commercially and recommended for the removal of wrinkles from normal women, has decided internal effects when applied daily on the skin of experimental animals. Such treatments (*a*) stimulate mammary development on normal male guinea pigs, (*b*) induce cornified vaginal oestrous smears in spayed female rats, (*c*) maintain or increase normal growth of the uterus in young or mature spayed rats, (*d*) in young male rats reduce testis weight by 80 per cent and seminal vesicle weight by 90 per cent in comparison with normal litter mates. 4. These results both emphasize the efficiency of applying hormones in a skin ointment and at the same time suggest caution in the use by normal persons of articles containing these active principles.

Further observations indicated that the absorption rate of hormones varies with the different oils and con-

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34. Walton, D. C., and Witherspoon, M. G.: Skin Absorption of Certain Gases, J. Pharmacol. & Exper. Therap. **36**:315 (Nov.) 1925.
35. Stejskal, K.: Permeabilität der Hautdecke, Zentralbl. f. Haut.- u. Geschlechtskr. **20**:315, 1925.
36. Stejskal, K.: Lactose Absorbed Through the Skin, Deutsche med. Wchnschr. **57**:1554 (Sept. 4) 1931.
37. Moore, C. R.; Lamar, J. K., and Beck, Naomi: Cutaneous Absorption of Sex Hormones, J. A. M. A. **111**:11 (July 2) 1938.

37a. Silberman, David; Radman, H. M., and Abarbanel, A. R.: Use of Testosterone Propionate in Treatment of Menopausal Patient: Preliminary Report on Use of Pellets of Crystalline Testosterone Propionate, Am. J. Obst. & Gynec. **39**:332 (Feb.) 1940; abstr. J. A. M. A. **114**:1390 (April 20) 1940.

centrations and that there is good evidence of greater effectiveness of testosterone when applied to the skin as an ointment than when injected subcutaneously in small quantities of sesame oil:

> It is presumed these phenomena reveal a more gradual and continuous absorption through the skin than occurs when administration is by subcutaneous injections. . . . The ease with which skin ointments containing hormones are applied and the tremendous influence these substances have when taken into the body more or less continuously present the possible menace that would apply to any powerful drug which is easily procured and administered. . . . Where hormone therapy is indicated, administration as skin ointments may prove to be the method of choice.

Baer [37b] applied to the skin of spayed rats estrogenic substances contained in hydrous wool fat, petrolatum and olive oil. He observed that there was no appreciable difference in the time required for estrus to develop, irrespective of the vehicle used. He further concluded that the follicular hormone is not stored in the skin, since a minimal daily dose was necessary in order to maintain estrus.

Ito and his co-workers [38] used female rats and rhesus monkeys in their experiments. They shaved the necks of the animals and applied varying quantities of menformon-folliculin (Organon's theelin). Precaution was taken to prevent the possibility of oral ingestion. The applied substances were permitted to remain on the skin for eight hours. The residue was then washed off with benzene. The experimental animals were exposed to this treatment for a number of weeks. Definite effects of estrone were noted in the enlargement of the uterus and of the mammary glands as well as a marked reaction in the estrous cycle. A comparison of various carriers for estrone showed the following order of absorption: first, 60 per cent alcohol; second, hydrous wool fat, and, third, petrolatum. The same quantities of estrone which when applied to the skin had produced pronounced physiologic as well as pathologic reactions were subsequently given orally. Ito concluded that application to the skin resulted in more effective reactions.

Smith [38a] states that "the skin of the monkey is highly absorptive, and in fact the androgens and estrogens seem to be more effective when applied to the skin than when injected."

Loeser [39] produced estrus in castrated monkeys by rubbing follicular hormone into the skin. In women suffering from ovarian insufficiency because of the removal of the ovaries, menstruation could be produced by cutaneous applications of the hormones. In women with normal ovarian function, Loeser found that the skin is penetrable to a degree varying with the individual.

David, Freud and de Jongh,[40] as a result of comparative studies with eleven pure estrogenic substances, concluded that they all cause thickening and cornification of the vaginal stratified epithelium and a change from the columnar epithelium to the stratified type in the seminal vesicles and prostate of the castrate. They consider estrogenic substances to possess three pharmacologic actions on the secondary sex organs of both sexes; namely, (*a*) stimulation of growth of smooth muscle tissue and interstitium; (*b*) stimulation of submucosa and stratified epithelial growth; (*c*) stimulation of growth of submucosa and undifferentiated cylindric epithelium in nontubular organs.

Werner and Collier [41] reported that daily injection of theelin in five surgically castrated women over periods of from eighty-nine to ninety-three days resulted in repeated uterine bleeding during the treatment. In addition, such benefits as alleviation of symptoms of the menopause were noted. The cervix increased in vascularity, the endometrium showed hyperplasia in the normal intermenstrual but not in the premenstrual phase, and the breasts were enlarged.

Dessau's [42] experiments showed that daily injections of estrone, estradiol or estriol into immature guinea pigs (castrated or normal) caused proliferation and metaplastic changes of the uterine epithelium. These changes were inhibited by corpus luteum hormone.

Ziskin,[43] investigating the effect of hormones on the mucous membrane of the mouth, came to the following conclusions:

> 1. The hormones progynon B and follutein injected respectively into women in the treatment of amenorrhea and prolonged menstrual bleeding affect the gingivae and oral mucous membranes. 2. Progynon B injections cause hyperkeratinization and hyperplasia of the oral epithelium. 3. The gums of women receiving progynon B are uniformly in a healthier state than those receiving follutein. 4. The gums of women receiving follutein show evidence of inflammation and degeneration both grossly and microscopically. 5. The Vincent's infection reported in one case was probably predisposed by hormonal treatment. 6. Follutein probably exerts its influence directly on the gums and oral mucous membranes.

Sylla [43a] administered "testiviron" in men and "progynon" in women in small doses (two 25 mg. doses of "testiviron" or two 50,000 unit doses of "progynon"). He reported an increased reaction against tuberculin injections, also against other allergens, and a decrease in the latent period of dermographism with increase in the redness.

Sabrazès, Le Chuiton and Gineste [44] have observed that the injection of estrogenic substance from the urine of pregnant women excites the glandular apparatus of the skin and may cause hyperplasia of the glands. Since the nipple is a part of the accessory sex organs, and the apocrine sweat glands and sebaceous glands seem to have some relationship to the sex function, it is not surprising that all these have a local reactivity to substances which influence the biologic activity of the gonads.

Lacassagne,[45] experimenting with the administration of estrogen to rats, rabbits and guinea pigs, found that it caused a distinct retardation in growth, cryptorchidism, early epidermoid metaplasia, and abscess formation

37b. Baer, H. L.: The Influence of Estrogenic Substances on the Skin, J. Invest. Dermat. **2**: 15 (Feb.) 1939.

38. Ito, Masao; Hajaru, Seizi, and Kon, R. T.: The Percutaneous Effect of the Administration of Sex Hormones, Zentralbl. f. Gynäk. **61**: 1094 (May 8) 1937.

38a. Smith, P. E., Columbia University College of Physicians and Surgeons, New York: Personal communication to the authors, June 18, 1938.

39. Loeser, A. A.: Resorption and Action of Follicular Hormone Rubbed into the Skin, J. Obst. & Gynaec. Brit. Emp. **44**: 710 (Aug.) 1937.

40. David, K.; Freud, J., and de Jongh, S. E.: Conditions of Hypertrophy of Seminal Vesicles in Rats: Effect of Derivatives of Estrone (Menformon), Biochem. J. **28**: 1360, 1934.

41. Werner, A. A., and Collier, W. D.: The Effect of Theelin Injections on the Castrated Woman, J. A. M. A. **100**: 633 (March 4) 1933.

42. Dessau, F.: Chronic Action of Estrogenic Substances on the Guinea Pig Uterus, Arch. internat. de pharmacodyn. et de thérap. **58**: 402 (May 15) 1937.

43. Ziskin, D. E.: The Effect of Hormonal Treatment on the Gums and Oral Mucosa of Women, J. Dent. Research **16**: 367 (Oct.) 1937.

43a. Sylla, Adolf: Steigerung der allergischen Reaktionslage durch Hormone, Klin. Wchnschr. **18**: 311 (March 4) 1939.

44. Sabrazès, J.; Le Chuiton, F., and Gineste, G.: Hyperplasie des glandes tegumentaires et adenomatose sudoripare après injections de folliculine chez le rat blanc, Compt. rend. Soc. de biol. **117**: 376, 1934.

45. Lacassagne, A.: Histophysiologic Effects of Estrogenic Substances, Compt. rend. Soc. de biol. **122**: 1060, 1936.

in the prostate, retention of urine, hydronephrosis, pyosalpinx and pyometria.

Burrows and Kennaway [46] reported that they observed enlargement and anaplasia of the prostate gland in mice resulting from the applications of estrone in benzene on the skin for periods up to several months.

Capuani [47] found that the follicular principle caused a significant reduction of the sexual activity in man as recognized by the decrease of libido and subsidence of pollutions in persons kept at enforced abstinence. Experimental animals show signs of reduced spermatogenesis, which, however, returns to normal even after excessive doses when the medication is discontinued.

Recent evidence [48] further proves that the anterior pituitary-like principle from the urine of pregnant women exerts a profound influence on the growth and function of the male genitalia. It may produce an increase in the size of the penis, scrotum and prostate in both man and animals before the age of puberty. After treating thirty-three patients for undescended testes, Thompson and Heckel found that genital growth was produced in eighteen, with more marked results in fourteen cases. In two boys aged 7 and 9 years the penis enlarged to adult size. There was, in addition, growth of the scrotum, prostate and pubic hair and a marked increase in frequency of erections, a change in the pitch of the voice and, in one, development of hair on the face. Changes simulating premature puberty also occurred in a 4 year old boy. In general, increased masculinity was simultaneous with genital growth. In all cases the response to administration of estrogen was prompt. Descent was produced in only 23 per cent of the total number of undescended testes, showing that genital growth may occur without descent of the testes. Thompson and Heckel caution that "the treatment for undescended testes with the anterior pituitary-like principle should be stopped before the genital growth becomes marked."

Clinical results also show marked effects due to administration of the androgens. Vest and Howard [49] in a report on the use of this substance conclude:

> The use of testosterone propionate in six cases of hypogonadism and two cases of prepuberal boys is reported. It seems to be a satisfactory replacement therapy for hypogonadism in the human. We have shown it produces profound anatomical changes resulting in the proportionate growth of the phallus, scrotum, seminal vesicles and prostate, as well as the development of pubic, axillary and extremity hair. There have been, in addition, changes in the general appearance, with improvement in the personality content. It has induced libido and potentia in individuals in whom these had not existed previously, and restored normal sex life in a patient who was impotent following castration. No evidence of increase in tolerance to the drug has been noted.

Geist, Salmon, Gaines and Walter [49a] studied the biologic effects of androgens in women and report:

> It is apparent from the observation recorded here that testosterone propionate administered in adequate doses to normally menstruating women suppresses menstruation temporarily and induces a rapidly developing atrophy of the endometrium and vagina. . . . Thereafter in some of the women signs and symptoms develop which one may regard as androgenic; viz., amenorrhea, hirsutism, hoarseness, acne and enlargement of the clitoris—a syndrome which is reminiscent of arrhenoblastoma of the ovary or tumors of the adrenal cortex. After discontinuation of the testosterone, a restoration to normal status of the menstrual rhythm and of the histologic pattern of the endometrium and vagina occurs, and the signs of virilism recede gradually.

It is interesting to note here that in men employed in packing ampules of estrogenic material a tender swelling of the breast is apt to develop from continual handling of the estrogenic compounds.[50]

Zondek [1] proved that the mammary glands are equally influenced by the same amount of hormone administered percutaneously or subcutaneously. Hormone ointment rubbed into the skin of the mammary region of a male guinea pig produces proliferation, first of the treated and then of the untreated mammary glands, which subsequently secrete milk. These results were verified by Jadassohn, Uehlinger and Zuercher (1937). They concluded that there must be a local hormone effect in addition to the hematogenous, since the locally treated mammae showed a more rapid and greater enlargement of the nipples than those which had not been treated.

Jadassohn, Uehlinger and Margot,[51] further investigating the reaction of the nipples, found that "a hematogenous effect of percutaneously absorbed sex hormones (as determined by the enlargement of the not previously treated nipple) was found to be present only after application of estrone and equilin." Oily solutions of the androgens have no effect on the nipple, but aqueous solutions produce a marked nipple enlargement.

MacBryde [51a] treated women suffering from hypogonadism and lack of mammary development with injections of 5,000 international units per gram of estradiol or estradiol benzoate. According to the records of breast growth, a threshold was reached at which growth ceased. When injections were discontinued, a rapid regression in the size of the breast was observed. When the breasts had returned to approximately their original size, a daily unilateral application was made of 5 Gm. of the estrogenic ointment. The other breast was anointed with the same quantity of the vehicle only. The latter presented only a slight enlargement, while the breast treated with estrogen showed a decided increase in size, and progressive growth was maintained during treatment. There were also evidences of an active estrous state, enlargement of the uterus and relief of hypogonadal symptoms. The results from a comparative study of these two forms of therapy were decidedly in favor of inunction, since MacBryde observed diminishing effectiveness in breast growth when the estrogenic substance was injected, whereas when it was cutaneously applied there was a steady progressive increase in size.

Burckhardt [52] rubbed small quantities of an ointment called estroglandol, the active ingredient of which is dihydro-estrone (estradiol), into the mammae of guinea pigs. After ten days pronounced enlargement of the

46. Burrows, Harold, and Kennaway, A. M.: On Some Effects Produced by Applying Estrin to the Skin of Mice, Am. J. Cancer **30**: 48 (Jan.) 1934.

47. Capuani, G. F.: The Influence of Follicular Hormone on the Male Sexual Organs in General and on the Spermatogenesis in Particular, Minerva med. **2**: 41 (Jan. 13) 1938.

48. Thompson, W. O., and Heckel, N. J.: Precocious Sexual Development from an Anterior Pituitary-like Principle, J. A. M. A. **110**: 1813-1818 (May 28) 1938.

49. Vest, S. A., Jr., and Howard, J. E.: Use of Testosterone Propionate in Hypogonadism, J. Urol. **40**: 154 (July) 1938.

49a. Geist, S. H.; Salmon, U. J.; Gaines, J. A., and Walter, R. I.: The Biologic Effects of Androgen (Testosterone Propionate) in Women, J. A. M. A. **114**: 1539 (April 20) 1940.

50. Ways of Giving Sex Hormones, editorial, Lancet **2**: 1117 (May 14) 1938.

51. Jadassohn, Werner; Uehlinger, E., and Margot, A.: The Nipple Test, J. Invest. Dermat. **1**: 31 (Feb.) 1938.

51a. MacBryde, C. M.: Production of Breast Growth in the Human Female by Local Application of Estrogenic Ointment, J. A. M. A. **112**: 1045 (March 18) 1939.

52. Burckhardt, W.: Percutaneous Folliculin Effect on Mammary Growth of Guinea Pigs, Swiss Society of Dermatology and Venerology, 1936.

mammae was observed. When treatment was discontinued, the size of the mammae gradually decreased. It was possible to increase or reduce the size of the mammae at will.

Fussgänger [53] produced growth of the comb in capons by topical application of androsterone, an androgen. The effective dose was one fiftieth of that required for injections.

These local effects resulting from direct application of active principles to the body surface have led to an investigation of their clinical usage in this manner.

Zondek [1] used the estrogenic substance for local therapy in arthritis ovaripriva with beneficial results. He was unable to apply it in cases of acne vulgaris and pruritus vulvae because of the possible irritating effects. Jaffe [54] reported good results in pruritus vulvae, kraurosis vulvae, juvenile acne and other conditions more or less clearly related to disturbances or changes in the sex function. The discontinuance of the therapy, however, usually resulted in relapses. Follicular hormone [55] ointment was applied in dermatoses relating to climacteric disturbances with beneficial results.

We [55a] have used local applications of estrogenic ointments in the treatment of kraurosis vulvae, but the results thus far have not been encouraging.

Rust [56] reported that 75 per cent of the cases of pruritus vulvae caused by dysfunction of the ovaries were cured by hormone therapy applied in the form of ointment and local injection.

Salmon [56a] treated fourteen women either ovariectomized or suffering from ovarian hypofunction. He used lanolin ointment containing from 500 to 20,000 rat units per ounce. His conclusion was that more than 100,000 rat units a week is necessary to produce an effect by means of cutaneous application. In six of these patients pruritus vulvae and vaginal symptoms were improved simultaneously with the appearance of estrus.

Frank,[56b] who for many years used estrogenic substances locally in the treatment of kraurosis vulvae, concluded that any improvement which resulted was merely transient. There were frequent recurrences of itching, unarrested progression of atrophy and even the appearance of carcinoma in kraurotic areas of some cases. In a personal communication April 21, 1940, Frank stated that he no longer employs estrogenic hormones for the treatment of kraurosis vulvae or senile vaginitis. He advises vulvectomy as the best method of treatment for kraurosis vulvae.

Mussio-Fourneir and his co-workers [56c] report 60 per cent success in the treatment of more than 100 cases of hypertrichosis by the local application of "folliculine." They believe from their limited experience that local endocrine therapy supported by other topical applications is of value in the treatment of acne. Certain menstrual abnormalities associated with the cutaneous disorder may be improved at the same time. These authors also report the pigmentation of areas of vitiligo by the local application of a pituitary preparation which activates the melanophore cells.

53. Fussgänger, R.: Med. chem. Ztschr. **2**: 194, 1934.
54. Jaffe, Kaete: Percutaneous Therapy of Dermatoses with Follicle Hormone, Schweiz. med. Wchnschr. **67**: 477 (May 22) 1937.
55. Klaften, E.: Med. Klin. **33**: 566 (April 23) 1937.
55a. Eller, J. J.: Tumors of the Skin, Philadelphia, Lea & Febiger, 1939, p. 229.
56. Rust, W.: Treatment of Pruritus Vulvae with Follicular Hormone, Zentralbl. f. Gynäk. **61**: 25 (Jan. 2) 1937.
56a. Salmon, Udall J.: Skin Absorption of the Dihydroxyesterin in Humans, Proc. Soc. Exper. Biol. & Med. **38**: 481 (Dec.) 1938.
56b. Frank, R. T.: The Sex Hormones, J. A. M. A. **114**: 1504 (April 20) 1940.
56c. Mussio-Fournier, J. C.; Morato-Manaro, J., and Albrieux, A.: Action locale des hormones, Presse méd. **47**: 844-848 (May 27) 1939.

## GLANDULAR DYSFUNCTION RESULTING FROM ABSORPTION OF ESTROGENIC SUBSTANCES

Estrogen stimulates the pituitary to the secretion of "luteinizing hormone." It has been demonstrated that estrogens including estrone, estriol, estradiol, estradiol monobenzoate, emmenin (estriol complex) and the like will cause pituitary enlargement when administered to rats of both sexes. Tumors of the pituitary resulting from prolonged treatment in rats, cutaneously and by injection, with large doses of estrogen have been observed by Cramer and Horning,[57] Zondek,[58] and McEuen, Selye and Collip.[59]

Diaz, Phelps, Ellison and Burch [60] found that long-term injections of estrogen decreased the size of the ovaries, with general regression of the germinal and interstitial elements. Ovaries affected in this way responded normally to injections of gonadotropic substances. Long-term injections of estrogen caused a marked hypertrophy of the pituitary. The adrenals were not significantly changed in weight. The addition of gonadotropic substances or of massive doses of estrogen caused further hypertrophy of the pituitary and a slight hypertrophy of the adrenals. These results indicate that estrogen acts directly on the pituitary and causes, after long periods of injection, an exhaustion of production of gonadotropic substance by the gland. The ovary is not directly damaged by long-term administration of estrogen but becomes atrophic because of inadequate stimulation.

Zondek [1] showed that long-continued treatment with these substances results in elimination of the growth factor and impairment of the growth of the skeleton and certain organs. He found, however, that not all methods of cutaneous application of these substances produce the same effect. The application of these substances dissolved in benzene produced growth impairment similar to that by subcutaneous injection. Animals treated cutaneously with hormones dissolved in oil showed no impairment of growth. The administration of estrogenic substances over a period of seven months caused large tumors in the pituitary glands of rats.

In eight out of twelve mice treated with estrogen for a long period, Cramer and Horning [57a] found the pituitary gland enlarged. Three of the mice had pituitary adenomas. They noted extensive changes in the uterus and vagina, atrophy of the testicles, degeneration of the adrenals and hypertrophy of the islands of Langerhans.

Gardner [61] observed that

> the estrogenic hormones have been found to induce a hypertrophy of the pituitary and a degranulation of the chromophilic cells, particularly the basophils, as well as changes in its hormone content. . . . The adrenals, thyroid, urinary tract, pancreas and several levels of the gastrointestinal tract were also studied in all or in representative mice from all the groups. Definite pathological changes have been observed in the adrenals of many animals, but such conditions were not uncommon in untreated controls. Various abnormal conditions have been noted in the urinary tract. Many of these were associated with

57. (a) Cramer, W., and Horning, E. S.: Experimental Production by Estrin of Pituitary Tumors with Hypopituitarism and of Mammary Cancer, Lancet **1**: 247 (Feb. 1), 1056 (May 9) 1936. (b) Cramer, W., and Horning, E. S.: Effect of Estrin on Pituitary Gland, Lancet **1**: 1056 (May 9) 1936.
58. Zondek, Hermann: Hormone des Ovariums und des Hypophysenvorderlappens, Vienna, Julius Springer, 1935.
59. McEuen, C. S.; Selye, Hans, and Collip, J. B.: Some Effects of Prolonged Administration of Estrin in Rats, Lancet **1**: 775 (April 4) 1936.
60. Diaz, J. T.; Phelps, Doris; Ellison, E. T., and Burch, J. C.: The Effects of Various Gonadotropic Substances upon the Ovaries, Pituitaries and Adrenals of Animals Receiving Long Term Injections of Estrin, Am. J. Physiol. **121**: 794 (March) 1938.
61. Gardner, W. U.: Influence of Estrogenic Hormones on Abnormal Growths, Cancer Problem, Symposium, 1937, pp. 67-75.

urine retention, the cause of which has not been entirely determined. . . . That changes may be found in the structures of certain endocrine glands following the injection of estrogens might be expected because certain reciprocal and indirect relationships have been experimentally demonstrated. In extended experiments, when some form of compensation may not or cannot occur, these interrelationships may be exaggerated, adding to the general complexity of the final results.

### ESTROGENIC SUBSTANCES AND CARCINOGENESIS

Fieser [62] reported that the similarity of chemical structure between the estrogenic and certain carcinogenic substances has led to the suspicion that applications of estrogens repeated for a long time may be a factor in the development of carcinomatous growth.[62]

Loeb [13] discussed this relationship as follows:

These investigations, in defining the chemical constitution of the carcinogenic agents present in tar and that of related synthetically produced compounds, have shown the chemical relationship of such substances to a whole series of other biologically important substances, such as cholesterol, bile acids, ergosterol and vitamin D; their relationship to the testis hormones and above all to the estrus producing hormones that are derived from the ovarian follicles and are present besides in the urine of pregnant women and of pregnant mares has also been demonstrated. However, to this class of related compounds belong also substances which, as far as their biologic effects are concerned, are as far removed from the carcinogenic and estrogenic principles as the glucosidic heart stimulants strophanthin and digitoxin, and certain alkaloids (morphine, codeine, colchicine). All these substances as well as the carcinogenic agents possess the phenanthrene ring; they differ from one another in the degree of hydrogenation and in the character of polar groups and of side chains. Because of these relationships between carcinogenic substances and the sterols, which naturally occur in the animal organism, Kennaway [64] and Cook [65] suggested that carcinogenic substances, similar to those obtained from tar, such as certain derivatives of 1:2 benzanthracene, might under some conditions arise in the body from sterols normally present in cells as the results of those local interferences that lead to the development of cancer.

The observations of Cook, Dodds, Hewett and Lawson [63c] show a relationship between the carcinogenic substances and the estrogenic substances in the similarity of their biologic activity. Two carcinogenic hydrocarbons, namely 3:4 benzpyrene and 5:6-cyclopenteno-1:2 benzanthracene, in a total amount of 100 mg. in sesame oil, produced estrus in 30 per cent of the rats that were injected subcutaneously, whereas 1:2:5:6-dibenzanthracene showed no action of this kind.

Witherspoon [66] points out that the essential difference in the action of these two groups of substances is that estrogenic substances essentially stimulate only the reproductive tract and the accessory sex organs, whereas the carcinogenic substances may stimulate growth in any body tissue.

Loeb [13] compared estrogenic and carcinogenic properties and drew the following conclusions: "(1) there are substances which are both estrogenic and carcinogenic; (2) there are carcinogenic substances which are not estrogenic; (3) there are estrogenic substances which are not carcinogenic; (4) even in cases in which compounds are both estrogenic and carcinogenic, there is no parallelism between the strength of the activities." He stated that "ovarian hormones in interaction with the hereditary factors are responsible for the origin of mammary cancer."

Burrows,[67] and also Cramer and Horning,[67a] in comparing the local carcinogenic effect of estrogenic substances to other carcinogenic substances, applied estrogen for long periods of time directly to the skin of mice according to the technic commonly used in the production of tar cancer but failed to produce cutaneous cancer.

Lacassagne in 1935 administered weekly injections of folliculin [68] benzoate to rabbits [69] and mice.[70] It was found that this treatment had elicited a fibromyomatous transformation in the uterine wall and an adenomatous proliferation in the cervix and the tubes. In a certain strain of mice which was more strongly predisposed to mammary cancer than other strains, congestion, leukocytic infiltration, epidermoid metaplasia and epithelial proliferation were found to be more marked. He [71] also gave alternate weekly injections of 300 international units of estrone benzoate combined with extracts of the anterior pituitary to two litters of mice from strains refractory to spontaneous carcinoma. In one, a female that died about seven and a half months after treatment had been started, there was found a large mediastinal tumor composed of lymphoid and epidermoid elements and therefore probably of thymic origin. There was a metastasis in one kidney. One of the ovaries, which was thickly studded with corpora lutea, contained a tumor the cells of which resembled those of the granulosa closely enough to make one think of a primary ovarian tumor metastasizing to the thymus. A second female that died after about five months' treatment had a squamous cell carcinoma of the uterus. Four litter mates were still living. Two litters from a strain in which an occasional neoplasm is observed were injected in the same way, but no new growths appeared.

Overholser and Allen [72] injected estrone into monkeys and observed changes in the cervix which were regarded by some pathologists as precancerous or even early carcinoma. The epithelial changes persisted after the cessation of the injections. Zuckerman,[73] however, was unable to confirm these observations. Although he found metaplastic processes in one animal, he did not regard the lesions as malignant or precancerous.

62. Fieser, L. F.: The Chemistry of Natural Products Related to Phenanthrene, ed. 2, New York, Reinhold Publishing Corporation, 1936.

63. (a) Cook, J. W., and others: Chemical Compounds as Carcinogenic Agents, Am. J. Cancer **29**: 219 (Feb.) 1937. (b) Dodds, E. C.: Relationship Between Estrogenic Substances and Cancer, Am. J. Obst. & Gynec. **29**: 301 (Aug.) 1935; The Hormones and Their Chemical Relations, Lancet **1**: 931 (May 5) 1934. (c) Cook, J. W.; Dodds, E. C.; Hewett, H. C., and Lawson, W.: The Estrogenic Activity of Some Condensed Ring Compounds in Relation to Their Other Biologic Activities, Proc. Roy. Soc. s. B. **114**: 272, 1934.

64. Kennaway, E. L.: Experiments on Cancer-Producing Substances, Brit. M. J. **2**: 1, 1925; Further Experiments on Cancer-Producing Substances, Biochem. J. **24**: 497, 1930.

65. Cook, J. W.: Aromatic Hydrocarbons: VII. 5:6 Cyclopenteno-1:2 Benzanthracene, a Cancer Producing Hydrocarbon, J. Chem. Soc. part 2, 1931, p. 2529.

66. Witherspoon, J. T.: Estrogenic, Carcinogenic and Anterior Pituitary Growth Principles, and Their Clinical Relation to Benign and Malignant Tumors, Am. J. Obst. & Gynec. **31**: 173 (Jan.) 1936.

67. Burrows, Harold: Brit. J. Surg. **23**: 191 (July) 1935.

68. Lacassagne (Compt. rend. Acad. d. sc. **195**: 630 [Oct. 10] 1932) employed a preparation called "folliculine benzoate." It is impossible to judge from the literature whether this or the benzoate of betohydroxyestrin (estrone) or whether it is identical with hydroxyestrin benzoate marketed in this country under the name "Progynon-B." In his subsequent (Compt. rend. Soc. de biol. **118**: 937, 1934) work Lacassagne designates the product simply as "folliculine."

69. Lacassagne, A.: Progressive Changes in the Uterus of Rabbits Submitted from Birth to Repeated Injections of Estrone (Folliculin), Compt. rend. Soc. de biol. **120**: 685-689, 1935.

70. Lacassagne, A.: Progressive Changes in the Mouse Uterus Under the Prolonged Administration of Estrone, Compt. rend. Soc. de biol. **120**: 1156-1185, 1935.

71. Lacassagne, A.: Malignant Tumors in Strains of Mice Refractory to Spontaneous Cancer Following Combined Hormonal Treatment, Compt. rend. Soc. de biol. **122**: 607-609, 1936.

72. Overholser, M.D., and Allen, Edgar: Ovarian Hormone and Traumatic Stimulation of Monkey's Cervix to Condition Resembling Early Cancer, Proc. Soc. Exper. Biol. & Med. **29**: 1322 (June) 1931; A Typical Growth Induced in Cervical Epithelium of Monkey by Prolonged Injections of Ovarian Hormone Combined with Chronic Trauma, Surg., Gynec. & Obst. **60**: 129 (Feb.) 1935.

73. Zuckerman, S.: Effects of Prolonged Estrin Stimulation on the Cervix Uteri, Lancet **1**: 435-437 (Feb. 20) 1937.

Gardner,[81] studying the influence of estrogenic substances on abnormal growths, came to the following conclusions: (1) The estrogenic substances are specific growth-stimulating chemicals; (2) there is a chemical structural similarity of the estrogenic materials and the definitely carcinogenic phenanthrene derivatives isolated from tar; (3) some of these synthetic carcinogenic chemicals also act on the female genital tissues in much the same way as the estrogenic chemicals. He used six different estrogenic chemicals—estrone, estriol, ketoestrin benzoate, hydroxy-estrin benzoate, equilin and equilin benzoate—and found that large quantities of estrogenic substances may produce abnormal growth of the mammary glands and also mammary tumors. Injections of excessive amounts frequently hindered normal body growth, resulted in retention of urine and were associated with certain other pathologic conditions such as abnormal development of the mammary glands. In using the various types of estrogenic substances, the author found that the carcinogenic effect of the different estrogens is directly proportionate to the degree of physiologic activity; i. e., to their potency in terms of rat units per milligram.

Gardner, Allen and Strong[74] found no malignant condition of the vagina in mice receiving large amounts of estrogenic substances. Hypertrophy of the connective tissue, however, in the wall of the upper part of the vagina and mucoid transformation in this tissue were frequently seen. In a few animals, leukocytic infiltration had partially removed small areas of epithelial tissue, and deep epithelial pegs reaching down into the surrounding connective tissue were found. The response of the uterus to large amounts of estrogenic substances was to some degree dependent on the particular strain of mice and the age of the animal used. If injections were started immediately after birth, the muscles of the uterus did not develop normally, the connective tissue of the mucous membrane was hyalinized and the epithelium showed squamous metaplasia. Only a few glands had developed. In four animals, infiltrating epithelial overgrowths were found in the lower parts of the uterine horns or in the cervix. The growths had penetrated the muscular wall or had grown beneath the vaginal epithelium. These manifestations of epithelial overgrowth have been confirmed by Lacassagne[75] and by Loeb, Burns, Suntzeff and Moskop.[76] Perry[77] was also able to produce epithelial hyperplasia, using combined applications of carcinogenic agents and estrogenic substances.

Estrogens injected into males inhibit the growth and function of the testes. Moore and Price[78] attributed this change to the reciprocal interrelationship between the pituitary gland and the gonads. Their experiments showed that the germinal epithelium was definitely damaged when mice received large quantities of estrogenic substances. Burrows[79] observed, as did Gardner,[80] an increase in the amount of interstitial tissue in the testis of some mice. Definite changes occurring in the seminal vesicles and in the prostate glands of mice have been described by Burrows and Kennaway[40] and by Lacassagne.[81] The smooth muscles in the seminal vesicles were hypertrophic, and in the prostate there was extensive squamous metaplasia associated with leukocytic infiltration. Cancerous growths of the male genital organs have not been reported in animals receiving estrogenic substances.

Perry and Ginzton[82] have reported on the production of neoplasms in a colony of female mice, half of which were treated with 1:2:5:6 dibenzanthracene and the other half with 1:2:5:6 dibenzanthracene and estrone. Numerous benign epithelial proliferations of the skin, breast, uterus, alimentary tract and lungs occurred before the development of carcinoma and appeared to be causally related to the subsequent malignant growths. They believed that the incidence of carcinoma of the skin is chronologically related to the development of carcinomas of the breast and that the carcinomas of the breast are causally and chronologically related to carcinoma of the uterus. A solution of dibenzanthracene (0.3 per cent) was applied to the skin at the nape of the neck twice a week with a camel's hair brush. One hundred and fifty adolescent females were used for these experiments. Six weeks later, estrone was applied in an estimated dose of 125 rat units. In the opinion of these investigators, the incidence of carcinoma of the skin in females as produced by dibenzanthracene was not intrinsically affected either by spaying or by the use of estrone.

Murray[83] reported a series of parabiotic experiments in which normal male and female mice of the dilute brown strain were united. The estrous cycles showed pronounced changes attributed to introduction of the male hormone into the blood stream. The ovaries were stimulated to a precocious and prolonged production of follicles which degenerated within the glands, with the result that no luteal tissue was formed. Though normally cancer of the breast develops in from 65 to 100 per cent of the breeding females and 50 per cent of the virgin females of this strain, no mammary cancers were observed in the parabiotic females. It seemed reasonable to assume, therefore, that proliferation and malignant changes in the mammary glands might be due in some measure to the luteal fraction of the ovarian hormone. On this hypothesis the observed difference in cancer incidence between the breeding and virgin females may be explained as being due to the prolonged luteal phase of pregnancy.

Taylor,[84] in reviewing the evidence for an endocrine factor in the etiology of mammary tumors, concluded that breast tumors were dependent on the ovarian hormone, since this hormone is essential for the development and preservation of the epithelium of the mammary gland, and without it there is no tissue on which any

74. Gardner, W. U.; Allen Edgar, and Strong, L. C.: Atypical Uterine and Vaginal Changes in Mice Receiving Large Amounts of Estrogenic Hormone, Anat. Rec. 64: 17 (suppl. 3, March) 1936.

75. Lacassagne, A.: Certain Biological Problems Relating to Cancer, Hormones and Radiation, privately published, 1936.

76. Loeb, Leo; Burns, E. L.; Suntzeff, V., and Moskop, Marian: Carcinoma-like Proliferations in Vagina, Cervix and Uterus of Mouse Treated with Estrogenic Hormones, Proc. Soc. Exper. Biol. & Med. 35: 320 (Nov.) 1936.

77. Perry, Isabella H.: Production of Carcinoma of the Uterus in Mice, Proc. Soc. Exper. Biol. & Med. 35: 325 (Nov.) 1936.

78. Moore, C. R., and Price, Dorothy: Gonad Hormone Functions and Reciprocal Influence Between Gonads and Hypophysis with Its Bearing on the Problem of Sex Hormone Antagonism, Am. J. Anat. 50: 13 (March) 1932.

79. Burrows, Harold: Changes Induced in the Interstitial Tissue of the Testis of the Mouse by Certain Estrogens, J. Path. & Bact. 42: 161 (Jan.) 1936.

80. Gardner, W. U.: Hypertrophy of Interstitial Cells in Testes of Mice Receiving Estrogenic Hormones, Anat. Rec. 68: 339 (June 25) 1937.

81. Lacassagne, A.: Epidermoid Metaplasia of the Prostate, Induced by Repeated High Doses of Folliculin, Compt. rend. Soc. de biol. 113: 990, 1933; Comparative Study of the Carcinogenic Action of Certain Estrogenic Hormones, Am. J. Cancer 28: 735 (Dec.) 1936.

82. Perry, Isabella H., and Ginzton, L. L.: The Development of Tumors in Female Mice Treated with 1:2:5:6- Dibenzanthracene and Theelin, Am. J. Cancer 29: 680 (April) 1937.

83. Murray, W. S.: Sex Hormones and Cancer; Some Effects of the Interplay of Sex Hormones upon the Incidence of Mammary Cancer in Mice, Am. J. Cancer 30: 517 (July) 1937.

84. Taylor, H. C., Jr.: The Evidence for an Endocrine Factor in the Etiology of Mammary Tumors, Am. J. Cancer 27: 525 (July) 1936.

carcinogenic agent may act. This explains the absence of cancer of the breast in early castrates and untreated male mice. Ovarian function is apparently essential for the common types of chronic mastitis and fibro-adenoma, the development of which is practically limited to the years of mature sexual life. This is not true of carcinoma, which may appear long after the menopause. With the neoplastic disease once established, a marked response to variations in glandular function, such as those incident to pregnancy and the menopause, is noted in chronic mastitis and fibro-adenoma. A moderate reaction to these changes is observable in some cases of carcinoma. He asserted that some evidence of a glandular dysfunction can be found in certain cases of chronic mastitis, but hormone conditions comparable to those necessary to produce carcinoma in mice by the injection of estrogenic substances are unknown in women. He concluded that there is as yet no clinical evidence of any specific endocrine dysfunction as the cause of cancer of the human breast.

Gardner and his co-workers [85] recently observed the development of a large carcinoma of the cervix uteri with metastases to the lumbar lymph nodes in a mouse injected with 10,500 international units of estradiol benzoate over a period of 319 days. This tumor was grafted successfully into male and female mice of the same strain and grew rapidly without further stimulation by estrogenic substances. Smaller invading epithelial growths found in eighteen other mice were considered as precancerous changes or early carcinomas.

Gardner, Smith, Strong and Allen [86] observed the rapid development of sarcomatous growth in five male mice which had received daily injections of estrone followed by weekly injections of keto-estrin benzoate. These sarcomas appeared at the sites of injection in the subcutaneous tissue of the back. Most of these tumors were grafted on other mice of the same strain and continued their rapid growth. Burns, Suntzeff and Loeb [87] also reported a similar development of sarcomas in mice at the sites of injection of estrogens.

There is no doubt that the estrogens have carcinogenic properties when absorbed by animals. However, in Kurzrok's [88] opinion there is no such danger to human beings. He states that he has given to individual patients as much as three million units of estrone by injection and has never noted the slightest neoplastic change in the genital organs, breast or skin as a result. Other investigators, however, are of the opinion that cancerous growths may arise in certain persons after the long-continued use of androgens and estrogens.

Cramer and Horning [57a] emphasize that:

> Since estrin preparations are now being used extensively in gynecological practice it may be well to point out that the carcinogenic changes here described were produced by the administration of estrin prolonged over a period representing a considerable fraction of the normal span of the life of a mouse and corresponding in man to a period of from seven to ten years, while the therapeutic administration of estrin preparations in man is, in skilled hands, limited to short periods of a few weeks or months.

Auchincloss and Haagensen [89] observed striking enlargement of the breasts of a number of women during the course of administration of progynon B (estradiol benzoate), and they reported one case in which cancer of the breast developed in a patient under prolonged treatment with this estrogen. While they were not able to conclude that the estradiol benzoate which the patient received was with certainty a contributing cause of her cancer, they felt that it was entirely possible, "indeed even probable." They concluded that:

> Until more is known about the effects of these substances we believe that their use should be avoided: (1) in large or prolonged doses, (2) when there is a family history of breast cancer, (3) without initial and repeated clinical examination of both breasts, and (4) in patients with chronic mastitis, carcinoma or any form of breast neoplasm, either before or after surgical or radiation treatment.

Parkes, Bishop and Dodds [90] also believe that scientific evidence is against any risk of cancer production by estrogens in therapeutic dosage and express the opinion that it would be "a great disservice to practical therapeutics if the use of sex hormones were to be in any way restricted on account of unsubstantiated speculation."

The correlation between the appearance of tumors and the administration of estrogenic substances is not quite clear. Sannicandro [91] attributes a certain importance to the estrogens in the pathologic changes of carcinoma. He feels, however, that the follicular hormone alone is not capable of producing a malignant neoplasm but that its influence becomes apparent when another local cause for the origin of cancer is established. This does not, however, explain the results obtained by Lacassagne,[92] using mice of low cancer strains, who observed that between the twelfth and the sixteenth month all those animals, both males and females, which were supposedly hereditarily resistant to cancer showed adenocarcinomas of the mammary glands, with the exception of one male which died at nine months with an abscess of the prostate. In this animal, the mammary glands showed marked hyperplasia. The explanation of these facts by assuming a dominant or recessive factor X for the production of cancer is obviously unsatisfactory. Sannicandro [91] concludes that strict control of the use of estrogens in therapy is strongly advisable.

Frank [93] sounded a note of warning in an editorial and said:

> Absorption of estrogens through the vaginal mucosa and through the skin likewise occurs. This method should not be used over long periods of time because carcinogenic potentialities are increased by topical application.

Frank [93a] again in THE JOURNAL stated:

> The question has been raised whether estrogenic medication may favor carcinogenesis. No direct confirmatory evidence has been adduced in the human being. With so much cholesterol and intermediate cholesterol derivatives normally circulating in the blood, no such by-effects need be anticipated from enteral or parenteral absorption, with the reservation that localized der-

85. Gardner, W. U.; Allen, Edgar; Smith, G. M., and Strong, L. C.: Carcinoma of the Cervix of Mice Receiving Estrogens, J. A. M. A. **110**: 1182, 1938.

86. Gardner, W. U.; Smith, G. M.; Strong, L. C., and Allen, Edgar: Development of Sarcoma in Male Mice Receiving Estrogenic Hormones, Arch. Path. **21**: 504 (April) 1936.

87. Burns, E. L.; Suntzeff, V., and Loeb, Leo: The Development of Sarcoma in Mice Injected with Hormones or Hormone-like Substances, Am. J. Cancer **33**: 534 (April) 1938.

88. Kurzrok, Raphael R.: The Endocrines in Obstetrics and Gynecology, Baltimore, Williams & Wilkins Company, 1937.

89. Auchincloss, Hugh, and Haagensen, C. D.: Cancer of the Breast Possibly Induced by Estrogenic Substance, J. A. M. A. **114**: 1517 (April 20), 1940.

90. Parkes, A. S.; Bishop, P. M. F., and Dodds, E. C.: Estrin and Cancer, Lancet **2**: 1365 (Dec. 5) 1936.

91. Sannicandro, G.: Estrogenic Hormones and Carcinogenesis, Ann. di ostet. e ginec. **58**: 1341 (Oct. 31) 1936.

92. Lacassagne, A.: Hormonal Pathogenesis of Adenocarcinoma of the Breast, Am. J. Cancer **27**: 217 (June) 1936; Mammary Cancer Produced by Folliculin in Mice, Paris méd. **2**: 233 (March 16) 1935.

93. The Dosage of the Estrogens, editorial, Am. J. Obst. & Gynec. **36**: 529 (Sept.) 1938.

93a. Frank, R. T.: The Sex Hormones, J. A. M. A. **114**: 1304 (April 20) 1940.

mal applications should be avoided, as the skin is particularly responsive to continued application of or exposure to carcinogenic agents in both animals and human beings.

Loeb [9] states:

> Injection of estrogenic hormones into mice may lead to the production of cancer in those organs in which these hormones induce, normally, growth processes, namely in the mammary glands, vagina and cervix. In addition, long continued injections of estrogenic hormones may induce (although in rather rare instances) sarcoma formation mainly, but not exclusively, at or near the point of injection.

Ewing [94] stated that it is unjustifiable to use topical applications of estrogenic substances in cosmetics, citing reports of the development of sarcomas at the site of injection of these substances. He also mentioned that such applications may cause an increase in the melanotropic hormones from the pituitary, following which there may be an increased tendency to melanoma. He believes "that the application of estrogenic hormones on or near the site of a melanotic mole may stimulate it to growth."

The Council on Pharmacy and Chemistry of the American Medical Association,[95] as early as 1933, warned against the indiscriminate use of estrogenic substances and stated:

> The possibility that a preparation as active as theelin is in animals might do considerable harm in its unconsidered clinical use has apparently not received the attention it deserves. Reports have recently appeared in the literature indicating that in experimental animals possibly serious damage may result from the prolonged administration of estrogenic substance.

In an editorial [96] which appeared in THE JOURNAL it was emphasized that the uncontrolled use of estrogens might result in dangerous consequences:

> Estrogen, as has already been well established, has definite uses in medicine when properly employed under controlled conditions. Now evidence becomes available that this endocrine principle, like all other potent endocrine substances, is a two-edged sword capable of remarkable achievements when properly used and dangerous when carelessly employed.

THE JOURNAL again in a recent editorial [96a] warned against the indiscriminate and prolonged use of estrogenic substances, particularly in the treatment of patients in whom there are already factors present which predispose to cancer. Reference was made to Gemmell and Jeffcoate,[96b] who reported their observations of the development of cancer of the cervix in three patients among forty-three who were treated with estrogens for kraurosis vulvae and senile vaginitis. The report of Auchincloss and Haagensen [97] on cancer of the breast possibly induced by estrogenic substance was also pointed out.

SUMMARY ON HORMONES

1. Androgens and estrogens are readily absorbed through the intact skin when applied in a solution or ointment.

2. By cutaneous application, hormones can cause systemic effects similar to those observed after ingestion or injection of these substances; in some instances, the effects are greater by percutaneous absorption.

3. Among the effects observed from the application of these substances to the skin of animals are reduction of the weight of the seminal vesicles and testes; enlargement and anaplasia of the prostate gland; increase of the height of the mammary nipples; disturbances in the menstrual cycle; changes in the mammary glands, reproductive and genital organs, and damage to the ovaries.

4. Absorption of estrogens may have various affects on the gingivae and oral mucous membranes.

5. The nipple test and the experiments showing enlargement of the comb of the capon from local applications of small quantities of estrogen indicate the possibility of other local effects.

6. Estrogen acts directly on the pituitary, causing a decrease in the production of the gonadotropic principle and hypertrophy. The ovaries are not directly damaged by administration of estrogen but become atrophic because of inadequate stimulation by the pituitary. Tumors of the pituitary may occur. The action on the pituitary by elimination of the growth hormone has also been found to impair the growth of the skeleton and certain organs.

7. There is a chemical structural similarity between the estrogenic substances, the sterols, the bile acids, vitamin D and some carcinogenic hydrocarbons.

8. Certain carcinogenic hydrocarbons can produce estrus in rats.

9. Estrogenic substances absorbed by various routes have produced in animals malignant and premalignant conditions of the genital tissues and accessory sex organs.

10. Because of recent reports of the development of cancer coincidental with prolonged estrogenic therapy, its indiscriminate use should be cautioned against particularly when there are factors already present which predispose to cancer.

11. Sarcomas have occurred in animals at the site of injection of estrogenic substances.

12. It has been reported that certain dermatoses may be benefited by inunction with estrogens; also that certain symptoms associated with the menopause, such as arthritis ovaripriva, have been relieved. Further investigation is necessary to corroborate this.

13. The treatment of kraurosis vulvae and senile vaginitis by topical applications of estrogens has not yet proved to be efficacious.

14. Menstruation can be produced in ovariectomized women by cutaneous application of hormones.

15. It has been reported that follicular substance causes a significant reduction of the sexual activity in man as recognized by the decrease of libido and subsidence of pollutions in a person kept at enforced abstinence. Experimental animals show signs of reduced spermatogenesis, which however returns to normal even after excessive doses, when the medication is discontinued.

16. It has been observed that men employed in packing ampules of estrogenic material have developed tender swelling of the breasts from continual handling of the estrogenic compounds.

17. Testosterone propionate has been reported to be a satisfactory replacement therapy for hypogonadism in the human being. Its use has produced profound anatomic changes resulting in the proportionate growth of the male genitals with increased functional activity.

18. It has been shown that the anterior pituitary-like principle from the urine of pregnant women exerts a

94. Ewing, James: Personal communication to the authors, June 1938.
95. Estrogenic Substances: Theelin, Report of Council on Pharmacy and Chemistry, J. A. M. A. 100:1331 (April 29) 1933.
96. Endocrene—A Cosmetic with a Menace, editorial, J. A. M. A. 110:1195 (April 9) 1938.
96a. Contraindications to Estrogen Therapy, editorial, J. A. M. A. 114:1560 (April 20) 1940.
96b. Gemmell, A. A., and Jeffcoate, T. N. A.: Estrogens and Carcinoma of the Uterus, J. Obst. & Gynec. Brit. Emp. 46:985 (Dec.) 1939.

profound influence on the growth and function of the male genitalia. It may produce an increase in the size of the penis, scrotum and prostate in both man and animals before the age of puberty.

19. A commercial face cream containing estradiol produced cancer in animals, as well as other profound systemic changes, when applied on the skin in one-fifth the amount recommended for daily use by women.

*(To be continued)*

## DIPHTHERIA MORTALITY IN LARGE CITIES OF THE UNITED STATES IN 1939

### SEVENTEENTH ANNUAL REPORT

The data for this review have been obtained from the local health departments through the means outlined in the report on typhoid deaths.[1] The health officer has provided the number of diphtheria deaths both among residents and among nonresidents which occurred in his city in 1939. As the time of the 1940 census approaches, local estimates of population become less trustworthy. They provide, however, the only available data. It is anticipated that the rates will be readjusted in keeping with the population data to be released following the completion of the federal census.

Special attention is directed to the use of symbols to indicate those cities in which either (1) all diphtheria deaths were stated to be in nonresidents or (2) one third or more of such deaths were stated to be in nonresidents. While table 11 lists the cities with no deaths in 1939, table 13 gives the cities which would be included in such an honor list unless burdened by deaths among nonresidents.

The fourteen New England cities (table 1) report a continued downward trend in the death rate for the group as a whole but still have not been able to overhaul the cities of the Middle Atlantic states, which continue to hold first place (table 16). Seven of the cities in this group (Springfield, Lynn, Lowell, New Bedford, New Haven, Waterbury, Somerville) report no death from diphtheria in 1939. Providence, after three years with no death among residents, records one such death in 1939, thus losing its place on the honor roll. Hartford reports no death occurring in a resident and but one among nonresidents, thus completing three years with no death among residents. Also there has been no typhoid death among residents in Hartford for two years. Three cities (Springfield, Lynn, Lowell) record no deaths during the past three years (table 10) and no typhoid deaths in 1939 (table 12). Lynn reports also no typhoid deaths in 1937 and 1938, and Lowell none in 1938. There has been no death from either diphtheria or typhoid among residents in Springfield during the past five years. New Bedford reports two years without a diphtheria death and three without a death from typhoid. New Haven records no diphtheria death among residents for five years. Somerville records but one typhoid death among residents in six years and but one from diphtheria in four years. Boston reports three diphtheria deaths, two among nonresidents. The total number of deaths in the area decreased from seventeen in 1938 to thirteen in 1939 (table 16). The death rate fell from 0.64 to 0.49. One city (Fall River) had a rate in excess of 2.0.

The eighteen cities in the Middle Atlantic states (table 2) continue to hold first place. The group rate

**TABLE 1.—*Death Rates of Fourteen Cities in New England States from Diphtheria (Including Croup) per Hundred Thousand of Population***

| | 1939 | 1938 | 1937 | 1935 to 1939 | 1930 to 1934 | 1925 to 1929 | 1920 to 1924 | 1915 to 1919 | 1910 to 1914 | 1905 to 1909 | 1900 to 1904 | 1895 to 1899 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Springfield | 0.0 | 0.0 | 0.0 | 0.3 | 2.1 | 10.3 | 15.4 | 24.9 | 19.1 | 31.3 | 29.6 | 51.3 |
| Lynn | 0.0 | 0.0 | 0.0 | 0.4 | 4.7 | 13.5 | 17.0 | 17.8 | 17.2 | 21.7 | 38.0 | 44.0 |
| Lowell | 0.0 | 0.0 | 0.0 | 2.4 | 9.4 | 10.6 | 16.7 | 23.5 | 20.6 | 31.0 | 50.3 | 44.3 |
| New Bedford | 0.0 | 0.0 | 0.0 | 0.4 | 4.8 | 10.9 | 16.5 | 17.0 | 20.9 | 22.6 | 25.1 | 53.6 |
| New Haven | 0.0 | 0.0 | 1.8* | 0.4 | 0.5 | 1.6 | 7.1 | 14.2 | 14.9 | 22.7 | 15.6 | 34.8 |
| Waterbury | 0.0 | 0.9 | 4.8 | 1.3 | 2.4 | 2.6 | 17.9 | 23.0 | 20.6 | .... | .... | .... |
| Somerville | 0.0 | 1.0 | 0.0 | 0.4 | 0.0 | 5.7 | 10.7 | 20.2 | 21.4 | 21.5 | 40.5 | 57.5 |
| Providence | 0.4 | 0.0 | 1.3* | 0.6 | 5.0 | 9.5 | 15.8 | 20.3 | 26.6 | 30.7 | 41.2 | 53.5 |
| Boston | 0.4† | 0.2* | 0.5 | 0.7 | 3.2 | 6.3 | 20.2 | 28.3 | 29.0 | 38.2 | 53.7 | 62.9 |
| Hartford | 0.5* | 1.1* | 0.0 | 1.4 | 1.1 | 5.3 | 11.9 | 13.6 | 25.3 | 28.1 | 28.6 | 47.6 |
| Cambridge | 0.8 | 0.8 | 0.0 | 0.3 | 1.2 | 3.2 | 8.9 | 12.9 | 23.6 | 26.5 | 46.7 | 71.9 |
| Worcester | 1.0 | 1.0† | 0.0 | 0.7 | 2.9 | 8.6 | 15.5 | 14.1 | 21.3 | 32.2 | 34.5 | 50.3 |
| Bridgeport | 1.3 | 2.0† | 0.0 | 0.8 | 1.0 | 11.8 | 19.6 | 21.4 | 23.3 | 26.6 | 34.2 | 43.9 |
| Fall River | 2.6† | 3.5 | 4.3 | 2.7 | 3.9 | 12.0 | 25.5 | 23.6 | 24.0 | 34.4 | 50.1 | 43.5 |

* All diphtheria deaths were stated to be in nonresidents.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.

**TABLE 2.—*Death Rates of Eighteen Cities in Middle Atlantic States from Diphtheria (Including Croup) per Hundred Thousand of Population***

| | 1939 | 1938 | 1937 | 1935 to 1939 | 1930 to 1934 | 1925 to 1929 | 1920 to 1924 | 1915 to 1919 | 1910 to 1914 | 1905 to 1909 | 1900 to 1904 | 1895 to 1899 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Rochester | 0.0 | 0.0 | 0.0 | 0.0 | 0.7 | 7.5 | 16.9 | 12.7 | 22.1 | 32.4 | 32.2 | 45.9 |
| Utica | 0.0 | 0.0 | 0.0 | 0.0 | 1.2 | 13.4‖ | .... | .... | .... | .... | .... | .... |
| Erie | 0.0 | 0.0 | 0.0 | 0.0 | 3.5 | 5.8 | 16.8 | 15.1 | 17.7 | 37.1 | 48.3 | 23.1 |
| Elizabeth | 0.0 | 0.0 | 0.0 | 0.3 | 4.5 | 13.2 | 19.2 | 19.3 | 14.8 | 51.7 | 42.4 | 69.5 |
| Albany | 0.0 | 0.0 | 0.7* | 0.1 | 2.9 | 7.5 | 12.8 | 16.4 | 20.0 | 31.6 | 36.9 | .... |
| Yonkers | 0.0 | 0.0 | 0.7 | 0.3 | 0.6 | 10.4 | 17.0 | 17.7 | 25.3 | .... | .... | .... |
| Paterson | 0.0 | 0.0 | 1.4† | 0.7 | 0.3 | 9.1 | 18.5 | 13.5 | 16.1 | 25.5 | 32.9 | 111.5 |
| Scranton | 0.0‖ | 0.7‖ | 2.1‖ | 0.7 | 1.3 | 11.7 | 12.3 | 22.1 | 23.4 | .... | .... | 77.8‖ |
| Trenton | 0.0 | 1.0† | 0.0 | 0.5 | 2.7 | 4.4 | 7.3 | 8.8 | 12.8 | 15.8 | 23.6 | 92.7‖ |
| Philadelphia | 0.1 | 0.3‖ | 0.3 | 0.3 | 1.3 | 11.8 | 16.7 | 22.7 | 24.6 | 34.1 | 38.0 | 103.6 |
| Newark | 0.2 | 0.2 | 0.2 | 0.2 | 3.0 | 14.3 | 9.7 | 14.6 | 23.2 | 30.1 | 46.7 | 79.1 |
| Buffalo | 0.2 | 0.3 | 0.5† | 0.3 | 4.8 | 9.1 | 24.0 | 27.3 | 22.0 | 18.4 | 24.8 | 53.5 |
| New York | 0.2 | 0.3 | 0.3 | 0.3 | 2.2 | 10.7 | 14.0 | 21.8 | 28.0 | 40.0 | 38.0 | 48.9 |
| Syracuse | 0.4 | 0.0 | 0.5* | 0.2 | 0.4 | 7.0 | 22.9 | 12.9 | 16.6 | 17.4 | 17.7 | 31.1 |
| Pittsburgh | 0.4 | 1.9† | 1.1 | 1.2 | 1.5 | 11.5 | 20.1 | 32.3 | 29.3 | 30.4 | 34.9 | 22.9 |
| Jersey City | 0.9 | 1.8 | 2.1 | 2.0 | 4.0 | 11.3 | 18.4 | 21.0 | 23.2 | 32.6 | 37.9 | 65.4 |
| Camden | 2.5† | 2.5† | 2.5† | 2.7 | 7.7 | 21.9 | 20.3 | 23.2 | 28.8 | 48.9 | 32.6 | 91.8 |
| Reading | 7.0 | 5.3‖ | 0.0 | 2.6 | 3.8 | 7.3 | 21.1 | 16.9 | 35.7 | 29.2 | 70.1 | 72.0 |

* All diphtheria deaths were stated to be in nonresidents.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
‖ Diphtheria deaths from Chapin's Municipal Sanitation.
§ Incomplete data.
¶ Diphtheria data furnished by Pennsylvania Department of Health, Harrisburg.

**TABLE 3.—*Death Rates of Nine Cities in South Atlantic States from Diphtheria (Including Croup) per Hundred Thousand of Population***

| | 1939 | 1938 | 1937 | 1935 to 1939 | 1930 to 1934 | 1925 to 1929 | 1920 to 1924 | 1915 to 1919 | 1910 to 1914 | 1905 to 1909 | 1900 to 1904 | 1895 to 1899 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Miami | 0.7* | 2.1† | 2.1† | 2.6 | 3.8 | 5.4‖ | .... | .... | .... | .... | .... | .... |
| Washington | 0.8† | 1.1 | 2.2 | 2.8 | 3.9 | 7.1 | 10.5 | 11.9 | 6.9 | 11.2 | 23.5 | 30.9 |
| Baltimore | 1.0† | 0.7† | 1.3 | 1.0 | 1.7 | 7.6 | 11.4 | 13.5 | 14.2 | 16.1 | 33.0 | 48.1 |
| Jacksonville | 1.3† | 2.6 | 2.0† | 2.6 | 5.4 | 6.0‖ | .... | .... | .... | .... | .... | .... |
| Wilmington | 1.8 | 1.8 | 0.9 | 1.6 | 5.3 | 10.9 | 11.6 | 15.2 | 18.0 | 27.5 | 30.0 | 84.9 |
| Richmond | 2.7† | 1.1* | 1.1† | 1.7 | 3.6 | 6.9 | 9.6 | 5.8 | 7.0 | 9.8 | 24.4 | 17.6 |
| Tampa | 3.0† | 3.0† | 2.0† | 3.1 | 4.8 | 4.6 | 5.2 | 9.5‖ | .... | .... | .... | .... |
| Norfolk | 3.1* | 2.3 | 2.3† | 2.6 | 4.6 | 4.1 | 4.3 | 4.1 | 6.7 | 17.0 | .... | .... |
| Atlanta | 3.3† | 4.0† | 4.1† | 4.4 | 5.7 | 7.0 | 13.3 | 10.1 | 12.5 | 14.2 | 11.1 | 10.5 |

* All diphtheria deaths were stated to be in nonresidents.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
§ Incomplete data.

The preceding articles were published in THE JOURNAL Sept. 20, 1924, p. 918; April 25, 1925, p. 1269; April 3, 1926, p. 1005; April 30, 1927, p. 1396; May 19, 1928, p. 1621; May 25, 1929, p. 1759; June 7, 1930, p. 1838; May 23, 1931, p. 1768; May 7, 1932, p. 1644, May 20, 1933, p. 1595; May 26, 1934, p. 1758; June 15, 1935, p. 2182; June 13, 1936, p. 2060; June 26, 1937, p. 2200; Aug. 6, 1938, p. 524, and May 20, 1939, p. 2043.

1. Typhoid in the Large Cities of the United States in 1939, J. A. M. A., to be published.

of 0.34 is significantly lower than that of 1938 (0.48) and the average for the quinquennial period 1930-1934 (2.50). The new rate represents a new all-time low. In 1938 there were sixty-four deaths, in 1939 but forty-six. Nine cities (Rochester, Utica, Erie, Elizabeth, Albany, Yonkers, Paterson, Scranton, Trenton) appear in the select list (table 11) with no diphtheria death in 1939. Syracuse, after four years with no death from either diphtheria or typhoid among residents, reports one such diphtheria death in 1939, thus losing its place on the honor roll. Utica holds the outstanding record

TABLE 4.—*Death Rates of Eighteen Cities in East North Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

| | 1939 | 1938 | 1937 | 1935 to 1939 | 1930 to 1934 | 1925 to 1929 | 1920 to 1924 | 1915 to 1919 | 1910 to 1914 | 1905 to 1909 | 1900 to 1904 | 1895 to 1899 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Grand Rapids | 0.0 | 0.0 | 0.6 | 0.2 | 0.3 | 2.0 | 19.6 | 13.5 | 20.0 | 28.6 | 17.2 | 32.4 |
| Fort Wayne | 0.0 | 0.0 | 0.8 | 2.0 | 3.3 | 5.1 | 13.1 | 6.3 | .... | .... | .... | .... |
| South Bend | 0.0 | 0.0 | 0.9 | 0.9 | 1.3 | .... | .... | .... | .... | .... | .... | .... |
| Youngstown | 0.0 | 0.0 | 1.7‡ | 0.7 | 3.3 | 10.5 | 18.5 | 11.9 | 40.5 | 32.5 | 20.0 | 17.6 |
| Peoria | 0.0 | 0.0 | 1.7 | 2.4 | 5.2 | 4.9 | 7.4 | 10.3 | 10.6 | 10.0‡ | 14.0 | 14.6 |
| Akron | 0.0 | 0.0 | 2.5 | 1.7 | 2.7 | 4.9 | 10.4 | 18.9 | 27.8 | 21.0‡ | .... | .... |
| Milwaukee | 0.0 | 0.3 | 0.6 | 0.4 | 2.0 | 8.5 | 11.4 | 19.5 | 27.5 | 28.4 | 22.7 | 51.7 |
| Toledo | 0.0 | 0.6* | 2.5 | 1.0 | 2.6 | 7.2 | 22.4 | 14.1 | 25.4 | 20.4 | 26.6 | 34.6 |
| Canton | 0.0 | 0.0 | 0.0 | 0.7 | 1.7 | 2.9 | 17.5 | 15.1‡ | .... | .... | .... | .... |
| Cleveland | 0.1 | 0.5 | 0.6 | 0.9 | 2.5 | 15.5 | 14.7 | 20.0 | 24.6 | 20.5 | 42.6 | 45.3 |
| Detroit | 0.4 | 1.0 | 2.0 | 1.0 | 4.8 | 19.7 | 24.3 | 32.2 | 33.2 | 22.6 | 38.5 | 42.9 |
| Columbus | 0.6 | 1.8 | 1.9† | 1.8 | 3.2 | 4.6 | 8.5 | 7.6 | 12.1 | 10.5 | 11.6 | 28.5 |
| Evansville | 0.9 | 0.9 | 0.3† | 2.2 | 3.2 | 3.7 | 13.9 | 14.9 | 16.1 | 21.2 | 13.6 | 18.1 |
| Chicago | 1.6 | 1.9 | 2.3 | 2.1 | 4.3 | 11.7 | 17.5 | 31.2 | 37.9 | 27.0 | 33.9 | 48.7 |
| Cincinnati | 1.9† | 2.2† | 1.1† | 2.4 | 3.2 | 5.2 | 10.6 | 13.2 | 13.9 | 17.0 | 17.3 | 27.2 |
| Flint | 1.9 | 1.9† | 1.8 | 2.6 | 2.7 | 4.5 | 29.9 | 25.5 | 12.7 | 11.0 | 16.5 | 6.9 |
| Indianapolis | 1.9 | 4.8† | 2.7 | 3.6 | 3.1 | 6.6 | 11.7 | 21.4 | 13.5 | 13.3 | 15.9 | 26.4‡ |
| Dayton | 3.0 | 5.7 | 1.4† | 4.0 | 3.5 | 4.6 | 9.4 | 9.5 | 22.1 | 13.3 | 17.2 | 27.4 |

* All diphtheria deaths were stated to be in nonresidents.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
‡ Diphtheria deaths from Chapin's Municipal Sanitation.
# Incomplete data.

with no diphtheria death during the past six years and no typhoid death for four years. Rochester and Erie report no diphtheria death for five years, Elizabeth none in four years. Albany records no death among residents in five years. New York reports twenty-two

TABLE 5.—*Death Rates of Six Cities in East South Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

| | 1939 | 1938 | 1937 | 1935 to 1939 | 1930 to 1934 | 1925 to 1929 | 1920 to 1924 | 1915 to 1919 | 1910 to 1914 | 1905 to 1909 | 1900 to 1904 | 1895 to 1899 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Memphis | 0.3* | 1.7† | 3.6† | 2.1 | 6.0 | 5.8 | 9.5 | 11.2 | 11.9 | 13.4 | 6.9 | 10.0 |
| Birmingham | 1.3* | 2.7† | 4.3† | 2.9 | 4.3 | 5.4 | 5.3 | 7.3 | 8.3 | 6.2 | 13.4 | 16.5 |
| Louisville | 1.7† | 2.5 | 0.3* | 2.1 | 6.3 | 4.6 | 10.4 | 9.5 | 9.0 | .... | .... | 20.0‡ |
| Knoxville | 2.3† | 5.0† | 6.4† | 7.5 | 9.6 | 6.3 | 11.2 | .... | .... | .... | .... | .... |
| Nashville | 3.0† | 4.3† | 3.7† | 4.1 | 8.2 | 11.8 | 8.0 | 6.9 | 7.3 | 10.3 | 13.9 | 20.1 |
| Chattanooga | 6.6 | 3.3 | 5.3 | 4.1 | 6.8 | 3.9 | 8.7 | 8.9 | .... | .... | .... | .... |

* All diphtheria deaths were stated to be in nonresidents.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
‡ Diphtheria deaths from Chapin's Municipal Sanitation.

deaths (twenty-six in 1938), all among residents. In 1938 there were two deaths among nonresidents. Philadelphia and Pittsburgh each record three deaths, all among residents; Buffalo, two among residents. Two cities (Camden, Reading) have rates in excess of 2.0. Camden reports three deaths, two among residents; Reading, eight among residents. The health officer of Reading states that these deaths occurred in the early part of the year during an epidemic of ninety-six cases which started in 1938. The outbreak was brought under control in the spring of 1939 by the use of vigorous methods employed to increase the percentage of preschool and school children to whom protective treatments were administered.

The nine cities in the South Atlantic states (table 3) report forty-one deaths in 1939, two less than in 1938. The death rate, however, has fallen from a quinquennial average of 3.54 for 1930-1934 to 1.56 in 1939. While there is no city in the area without a death, two (Miami, one death; Norfolk, four deaths) report all among non-

TABLE 6.—*Death Rates of Nine Cities in West North Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

| | 1939 | 1938 | 1937 | 1935 to 1939 | 1930 to 1934 | 1925 to 1929 | 1920 to 1924 | 1915 to 1919 | 1910 to 1914 | 1905 to 1909 | 1900 to 1904 | 1895 to 1899 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Duluth | 0.0 | 0.0 | 0.0 | 0.2 | 0.4 | 2.0 | 4.0 | 10.2 | 8.8 | 24.2 | 29.1 | 7.6 |
| Des Moines | 0.0 | 0.0 | 0.0 | 1.7 | 4.3 | 5.2 | 15.1 | 16.6 | 15.1 | 23.0‡ | .... | .... |
| St. Paul | 0.0 | 0.3 | 0.7 | 0.3 | 1.1 | 5.2 | 17.5 | 20.7 | 31.4 | 31.1 | 27.9 | 43.3 |
| Wichita | 0.0 | 1.9† | 0.0 | 1.1 | 4.6 | 4.3 | .... | .... | .... | .... | .... | .... |
| Kansas City, Kan. | 0.0 | 2.3 | 2.3 | 1.6 | 3.7 | 4.6 | 9.3 | 23.1 | 12.4‡ | .... | .... | .... |
| Minneapolis | 0.2 | 0.4 | 0.3* | 0.6 | 1.7 | 11.9 | 13.4 | 19.9 | 29.3 | 24.4 | 44.0 | 34.0 |
| Kansas City, Mo. | 0.2 | 1.4 | 0.5* | 0.9 | 3.3 | 4.7 | 14.4 | 22.8 | 15.7‡ | .... | .... | .... |
| Omaha | 0.9 | 0.4 | 0.0 | 1.4 | 4.7 | 6.4 | 22.9 | 26.8 | 15.8 | 24.5 | 20.5 | 28.3 |
| St. Louis | 1.0† | 1.9† | 2.9† | 2.3 | 4.3 | 10.3 | 16.1 | 24.4 | 28.7 | 19.4 | 43.3 | 42.9 |

* All diphtheria deaths were stated to be in nonresidents.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
# Incomplete data.

TABLE 7.—*Death Rates of Eight Cities in West South Central States from Diphtheria (Including Croup) per Hundred Thousand of Population*

| | 1939 | 1938 | 1937 | 1935 to 1939 | 1930 to 1934 | 1925 to 1929 | 1920 to 1924 | 1915 to 1919 | 1910 to 1914 | 1905 to 1909 | 1900 to 1904 | 1895 to 1899 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oklahoma City | 0.4 | 1.3 | 1.8 | 2.0 | 5.7 | 10.9 | .... | .... | .... | .... | .... | .... |
| Fort Worth | 0.5* | 3.3 | 4.4 | 3.8 | 7.2 | 10.5 | 1.7‡ | 2.4‡ | 2.6 | 2.8 | 5.4 | .... |
| Tulsa | 0.6 | 2.5 | 1.4 | 2.0 | 6.8 | 12.5 | 8.3‡ | .... | .... | .... | .... | .... |
| Houston | 0.8 | 1.5 | 1.7 | 2.8 | 5.6 | 8.2 | 6.4 | 6.1 | 7.8 | 10.5 | 4.2‡ | 2.4 |
| San Antonio | 1.1 | 1.9† | 2.7 | 4.0 | 5.6 | 10.3 | 7.7 | 8.7 | 6.7 | 7.6 | 17.1 | 20.6 |
| El Paso | 2.8† | 4.9 | 6.5 | 4.4 | 8.0 | 7.3 | 20.0 | 17.6 | 20.2 | .... | .... | .... |
| Dallas | 2.9† | 2.0† | 4.3 | 4.6 | 9.7 | 9.8 | 8.3 | 7.4 | 6.9 | 8.1 | 16.9 | 16.0 |
| New Orleans | 3.6 | 3.6† | 3.9 | 4.1 | 5.5 | 6.5 | 6.5 | 11.6 | 19.6 | 10.2 | 11.5 | 17.1 |

* All diphtheria deaths were stated to be in nonresidents.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
# Incomplete data.

TABLE 8.—*Death Rates of Eleven Cities in Mountain and Pacific States from Diphtheria (Including Croup) per Hundred Thousand of Population*

| | 1939 | 1938 | 1937 | 1935 to 1939 | 1930 to 1934 | 1925 to 1929 | 1920 to 1924 | 1915 to 1919 | 1910 to 1914 | 1905 to 1909 | 1900 to 1904 | 1895 to 1899 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Long Beach | 0.0 | 0.0 | 0.0 | 0.6 | 0.8 | 2.8 | 10.4‡ | .... | .... | .... | .... | .... |
| Portland | 0.0 | 0.0 | 0.0† | 0.4 | 1.3 | 6.4 | 11.3 | 6.0 | 12.2 | 12.2 | 20.2 | .... |
| Seattle | 0.3 | 0.3 | 0.6 | 0.4 | 0.4 | 1.4 | 6.6 | 5.5 | 5.2 | 12.5 | 13.4‡ | 27.1‡ |
| Oakland | 0.6 | 1.9† | 2.6 | 2.4 | 2.0 | 7.4 | 18.3 | 8.1 | 10.2 | 16.1 | 29.1 | .... |
| Salt Lake City | 0.7 | 0.7* | 2.0† | 1.0 | 0.3 | 10.1 | 12.5 | 14.5 | 15.1 | 34.2 | 48.0 | 14.3 |
| Spokane | 0.8 | 0.3 | 0.0 | 0.7 | 0.7 | 7.5 | 11.3 | 4.2 | 7.6 | 25.5 | .... | 30.3‡ |
| Tacoma | 0.9* | 0.0 | 0.9* | 0.4 | 1.0 | 0.3 | 12.4 | 7.7‡ | .... | .... | .... | .... |
| San Francisco | 1.0 | 1.3 | 1.2 | 0.9 | 1.7 | 4.6 | 13.0 | 17.0 | 9.2 | 14.4 | 44.2 | 23.6 |
| San Diego | 1.0† | 3.7† | 3.2 | 2.4 | 2.9 | 6.6 | 12.2 | 10.5 | 8.0 | 5.8 | 2.6 | .... |
| Los Angeles | 1.4† | 2.9† | 2.3† | 2.4 | 4.8 | 7.0 | 14.4 | 7.1 | 7.5 | 15.3 | 25.4 | 25.9 |
| Denver | 3.2 | 4.5 | 2.0 | 3.4 | 3.9 | 8.9 | 21.3 | 6.7 | 10.2 | 20.3 | 29.6 | 27.3 |

* All diphtheria deaths were stated to be in nonresidents.
† One third or more of the reported diphtheria deaths were stated to be in nonresidents.
‡ Diphtheria deaths from Chapin's Municipal Sanitation.
# Incomplete data.

residents. Of the remaining seven cities in the group, all but one (Wilmington) report that one third or more of the deaths occurred among nonresidents. Four cities (Richmond, Tampa, Norfolk, Atlanta) have rates in excess of 2.0. Atlanta, with ten deaths, records six among nonresidents; Baltimore, with nine deaths, also six among nonresidents. The health officer of Baltimore records sixty-seven cases in 1939 in contrast with 108 cases in 1934 (the previous low point). Richmond

reports five deaths, three among nonresidents; Tampa records three, two among nonresidents. Of five deaths reported from Washington, it is stated that two occurred in nonresidents.

The eighteen cities in the East North Central states (table 4) report a rather striking decrease in the number of deaths from 153 in 1938 to ninety-three in 1939. The rate has decreased from 1.54 to 0.94 (table 16). While in 1937 there was no city on the honor roll, in 1938 there were six (all remaining in 1939) and in 1939 there were nine (Grand Rapids, Fort Wayne, South Bend, Youngstown, Peoria, Akron, Milwaukee, Toledo, Canton). Grand Rapids records but one death among residents each from typhoid and diphtheria during the past four years. Fort Wayne reports no typhoid death for five years, none from diphtheria for two years.

TABLE 9.—*Two Cities with Highest Diphtheria Rate for 1939*

| | |
|---|---|
| Chattanooga | 8.8 |
| Reading | 7.0 |

TABLE 10.—*Twenty-One Cities with No Diphtheria Deaths in 1938 and 1939*

| | | |
|---|---|---|
| Akron | Grand Rapids | Peoria |
| Albany | Long Beach ‡ | Rochester ‡ |
| Des Moines ‡ | Lowell ‡ | South Bend |
| Duluth † | Lynn ‡ | Springfield ‡ |
| Elizabeth † | New Bedford | Utica * |
| Erie ‡ | New Haven | Yonkers |
| Fort Wayne | Paterson | Youngstown |

* No diphtheria deaths in six years.
‡ No diphtheria deaths in five years.
† No diphtheria deaths in four years.
‡ No diphtheria deaths in three years.

TABLE 11.—*Thirty-Two Cities with No Diphtheria Deaths in 1939*

| | | |
|---|---|---|
| Akron | Lowell | South Bend |
| Albany | Lynn | Springfield |
| Canton | Milwaukee | St. Paul |
| Des Moines | New Bedford | Toledo |
| Duluth | New Haven | Trenton |
| Elizabeth | Paterson | Utica |
| Erie | Peoria | Waterbury |
| Fort Wayne | Portland | Wichita |
| Grand Rapids | Rochester | Yonkers |
| Kansas City, Kan. | Scranton | Youngstown |
| Long Beach | Somerville | |

South Bend has seen four years pass without a typhoid death, two without a diphtheria death. Three other cities (Youngstown, Peoria, Akron) report no diphtheria death in 1938 and 1939. Chicago records fifty-six deaths, all among residents. Of nine deaths in Cincinnati, six occurred in nonresidents. Cleveland reports but one death; Detroit, seven; Flint, three, all among residents. Of seven deaths in Indianapolis, two occurred among nonresidents. One city (Dayton) reports a rate in excess of 2.0. The health officer here records seven deaths, five among residents.

The cities in the East South Central states (table 5) report a rate of 1.98, compared with 3.25 in 1938 and a quinquennial average for 1930-1934 of 6.36. In 1938 there were forty-four deaths, in 1939 but twenty-seven. While there is no city in the area without a death, two (Memphis, Birmingham) report all among nonresidents. Of the remaining four cities in the group, all but one (Chattanooga) report that one third or more of the deaths occurred among nonresidents. Three cities (Knoxville, Nashville, Chattanooga) report rates in excess of 2.0. Knoxville reports three deaths, two among nonresidents; Nashville five deaths, three among nonresidents. Chattanooga records eight deaths, two among nonresidents.

The nine cities in the West North Central states (table 6) stand in third place, following the Middle Atlantic and New England groups. They report a very

TABLE 12.—*Twenty Cities with No Diphtheria and Typhoid Deaths in 1939*

| | | |
|---|---|---|
| Akron | Lynn ‡ | St. Paul |
| Albany | Milwaukee | Trenton |
| Duluth | New Bedford * | Utica † |
| Elizabeth * | Paterson | Waterbury |
| Fort Wayne * | Somerville | Wichita |
| Kansas City, Kan. | South Bend * | Yonkers |
| Lowell * | Springfield | |

* No diphtheria or typhoid deaths in two years.
† No diphtheria or typhoid deaths in four years.
‡ No diphtheria or typhoid deaths in three years.

TABLE 13.—*Seven Cities in Which All Diphtheria Deaths in 1939 Were Stated to Be in Nonresidents*

| | | |
|---|---|---|
| Birmingham | Memphis | Norfolk * |
| Fort Worth * | Miami | Tacoma |
| Hartford ‡ | | |

* All typhoid deaths in 1939 were stated to be in nonresidents.
‡ No typhoid deaths in 1939.

significant decrease in rate (1.11 in 1938, 0.64 in 1939). The diphtheria deaths decreased from thirty-one in 1938 to eighteen in 1939. It is the only group with no city with a rate in excess of 2.0. Five of the nine cities are on the honor roll (Duluth, Des Moines, St. Paul, Wichita, Kansas City, Kan.). St. Louis records the highest rate but reports that 50 per cent (seven out of fourteen) deaths were among nonresidents. In the area as a whole only eleven deaths occurred among residents of the cities (seven in St. Louis, two in Omaha, one each in Kansas City, Mo., and Minneapolis). No diphtheria death and but one typhoid death has occurred in Duluth during the past four years. The health officer of Kansas City, Mo., reports but twenty-four cases in 1939, fifty-six in 1938.

TABLE 14.—*Number of Cities with Various Diphtheria Death Rates*

| | No. of Cities | 40 and Over | 20 and Over | 10 and Over | 5 and Over | Under 5 | 0.0 |
|---|---|---|---|---|---|---|---|
| 1900-1904 | 64 | 32 | 60 | 61 | 62 | 2 | 0 |
| 1905-1909 | 66 | 24 | 53 | 63 | 65 | 1 | 0 |
| 1910-1914 | 66 | 22 | 46 | 64 | 66 | 2 | 0 |
| 1915-1919 | 72 | 3 | 43 | 66 | 71 | 1 | 0 |
| 1920-1924 | 79 | 1 | 20 | 63 | 78 | 1 | 0 |
| 1925-1929 | 84 | 0 | 25 | 63 | 81 | 3 | 0 |
| 1930-1934 | 86 | 0 | 14 | 65 | 86 | 2 | 0 |
| 1935-1939 | 92 | 0 | 1 | 22 | 67 | 25 | 0 |
| 1930-1934 | 86 | 0 | 0 | 0 | 24 | 62 | 0 |
| 1935 | 91 | 0 | 0 | 2 | 17 | 70 | 19 |
| 1936 | 91 | 0 | 0 | 0 | 5 | 69 | 19 |
| 1937 | 91 | 0 | 0 | 0 | 3 | 70 | 20 |
| 1938 | 91 | 0 | 0 | 0 | 3 | 65 | 24 |
| 1939 | 92 | 0 | 0 | 0 | 2 | 59 | 31 |

The eight cities in the West South Central group (table 7) report a continued decrease in rate and have kept ahead of the East South Central group in the downward trend. The diphtheria deaths decreased from fifty-seven in 1938 to forty in 1939. The rate declined from 2.69 in 1938 to 1.88 in 1939 (from a quinquennial average of 6.55 for 1930-1934). While there is no city in the area without a death, one (Fort Worth) reports

its one death among nonresidents. Three cities (El Paso, Dallas, New Orleans) report rates in excess of 2.0. El Paso records three deaths, one among nonresidents; Dallas nine, four among nonresidents. New Orleans reports nineteen deaths, ten among nonresidents.

The Mountain and Pacific states (table 8) report forty-five deaths in 1939, a marked decrease over the seventy-four recorded in 1938 and well below the fifty-nine reported in 1937. The rate has decreased from 1.75 in 1938 to 1.05 in 1939. There are two cities (Long Beach, Portland) with no death in 1939.

TABLE 15.—*Total Diphtheria Death Rates for Eighty-Eight Cities, 1923-1939* *

| | Population | Diphtheria Deaths | Diphtheria Death Rate per 100,000 of Population |
|---|---|---|---|
| 1923 | 21,080,889 | 4,079† | 13.13 |
| 1924 | 21,782,941 | 3,439 | 10.94 |
| 1925 | 22,384,884 | 3,133 | 9.67 |
| 1926 | 33,046,827 | 3,106 | 9.40 |
| 1927 | 33,708,920 | 3,491 | 10.36 |
| 1928 | 34,370,813 | 3,176 | 9.24 |
| 1929 | 35,032,906 | 2,730 | 7.83 |
| 1930 | 35,694,802 | 1,827 | 5.13 |
| 1931 | 36,586,412 | 1,366 | 3.74 |
| 1932 | 37,084,712 | 1,191 | 3.21 |
| 1933 | 37,084,712 | 861 | 2.32 |
| 1934 | 36,777,112 | 921 | 2.52‡ |
| 1935 | 36,777,112 | 764 | 2.08‡ |
| 1936 | 37,575,105 | 581 | 1.59 |
| 1937 | 38,169,704 | 536 | 1.46§ |
| 1938 | 38,410,545 | 473 | 1.29‖ |
| 1939 | 38,684,731 | 319 | 0.83¶ |

* The five following cities are omitted from this summary because data for the full period are not available: Jacksonville, Miami, Oklahoma City, South Bend and Utica.

† Data for Forth Worth lacking.

‡ The rate for the ninety-three cities in 1935 is 2.09 (population 37,437,812, diphtheria deaths 782). The corresponding rate for 1934 was 2.26 and the average for 1930-1934 was 3.34. The rate for ninety-three cities in 1937 is 1.51, population 38,240,094, diphtheria deaths 577.

§ Rate for ninety-three cities in 1937 was 1.46 (total population 38,085,435, diphtheria deaths 556).

‖ Rate for ninety-three cities in 1938 was 1.23 (total population 38,142,526, diphtheria deaths 463).

¶ Rate for ninety-three cities in 1939 was 0.82 (total population 38,264,540, diphtheria deaths 325).

Special Note.—Deaths for 1936 have been corrected, as Yonkers originally reported eight deaths and later corrected report to one death.

TABLE 16.—*Total Diphtheria Death Rates per Hundred Thousand of Population for Ninety-Three Cities According to Geographic Divisions*

| | Population | Diphtheria Deaths 1939 | Diphtheria Deaths 1938 | Diphtheria Death Rates 1939 | 1938 | 1930-1934 | 1925-1929 |
|---|---|---|---|---|---|---|---|
| New England | 3,657,824 | 13 | 17 | 0.49 | 0.64 | 3.56 | 8.34 |
| Middle Atlantic | 15,692,500 | 46 | 64 | 0.34 | 0.46 | 2.50 | 9.97 |
| South Atlantic | 2,822,237 | 41 | 43 | 1.56 | 1.63 | 3.54 | 7.37* |
| East North Central | 9,883,376 | 90 | 153 | 0.94 | 1.54 | 3.66 | 11.21† |
| East South Central | 1,364,925 | 27 | 44 | 1.98 | 3.25 | 6.36 | 6.34 |
| West North Central | 2,809,679 | 16 | 21 | 0.61 | 1.11 | 3.22 | 7.42 |
| West South Central | 2,136,406 | 40 | 57 | 1.88 | 2.69 | 6.55 | 9.24‡ |
| Mountain and Pacific | 4,276,412 | 45 | 74 | 1.05 | 1.75 | 2.69 | 6.28 |

* Lacks data for 1925 for Jacksonville and Miami.

† Lacks data for South Bend.

‡ Lacks data for Oklahoma City for 1925 and 1926.

Tacoma is charged with one death among nonresidents, although there has occurred no death among residents of Tacoma in five years. Long Beach reports no death for three years. But one city (Denver) records a rate in excess of 2.0. Salt Lake City reports a death among residents in 1939 after passing three years without such a death. Los Angeles reports twenty deaths, seven among nonresidents; San Francisco seven, six among residents. Denver reports ten deaths among residents, no record being kept for nonresidents.

Of the entire ninety-three cities there remain two with a rate of 5.0 and over (tables 9 and 14). The number of cities with no deaths from diphtheria has increased by eight; that is, from twenty-four to thirty-two. For the eighty-eight cities (table 15) for which data are available since 1923 there occurred 319 deaths from diphtheria in 1939, which is by far the lowest of record (473 in 1938). The rate for this group of cities is for the first time less than 1.0. The rate for the ninety-three cities studied in 1939 is also below 1.0 (0.82). The actual number of diphtheria deaths has decreased by 160 (from 483 to 323). This is a remarkable record.

The statements from the various public health administrators indicate that intensive protection programs are being carried on in many parts of the country. The family physician continues to become a more important part of the program and is giving more protective treatments in his own office. The evidence continues to indicate that the protection programs so extensively maintained are resulting in a very definite lower death rate from diphtheria.

## THE PHARMACOPEIA AND THE PHYSICIAN

## ORAL AND MEDICAL TREATMENT OF GONORRHEA IN THE MALE

P. S. PELOUZE, M.D.
PHILADELPHIA

*This is one of the second series of articles written by eminent authorities for the purpose of extending information concerning the official medicines. The twenty-four articles in this series have been planned and developed through the cooperation of the U. S. Pharmacopeial Committee of Revision and* THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.—ED.

It has been the hope of most of those who are interested in treatment of gonorrhea, from the standpoint both of cure of the patient and of social protection, that some type of treatment could be devised which would be so safe, simple and efficient that it could be called a "standard form of treatment." The Cooperative Clinical Group studies were of so much value in revealing the relative merits of different forms of treatment for syphilis that the Male Clinical Committee of the American Neisserian Medical Society attempted, through the questionnaire method among its members, to reach some uniform stand regarding the treatment of gonorrhea. So successful were the results of this inquiry that a scheme of treatment was worked out for this disease in the male which looked as though it would accomplish the purpose. Then came sulfanilamide to make the plan look, for a season, as though it were a relic from by-gone ages. A subject which was always confusing became doubly so in that men's minds were wooed away from the local attack of a largely local disease.

Today there is, perhaps, enough that is clinically reliable to warrant one saying that this drug alone will bring about prompt cure in from 25 to 40 per cent of dispensary patients, from 45 to 55 per cent of office patients and, perhaps, from 75 to 85 per cent of bed patients. There are actual data to show that many patients whose symptoms disappear still harbor

the gonococcus and transmit infection. And there are many cases in which sulfanilamide causes no curative response whatever, cases in which one must rely on older and more tried methods of treatment if one is to promote cure. As one strikes an average, it is obvious that this is true of approximately half of all male infections. And, as there are millions of infections every year, it can be seen that the committee of the American Neisserian Medical Society was not making a collection of antiques when it labored to set up a "standard form of treatment."

Following the introduction of sulfanilamide a number of other sulfonamide derivatives have been produced, some of which have shown as much curative value as has sulfanilamide itself. One, sulfapyridine, has been spoken of even more glowingly and there is accumulating evidence to suggest that it is somewhere between 25 and 50 per cent more efficient than sulfanilamide. Its cost, however, is such that it is far beyond the financial reach of dispensary patients. To date, only sulfanilamide and sulfapyridine are on the market. It is earnestly to be hoped that a way may be found to reduce the price so that both the poor and the near poor may share the benefits.

At least two of the other sulfonamides now being experimentally used for gonorrhea have shown an unfortunate tendency to produce peripheral neuritis.

Because of the unfortunate limitations to the general use of sulfapyridine it might be just as well to consider sulfanilamide rather fully, realizing that what is true of it from the standpoint of toxicity and other features, aside from the obtainable percentage of cures, apply equally to the former drug in equal doses. It, however, should be stated that sulfapyridine rarely is given in larger doses than 4 Gm. in the twenty-four hours. And no dissertation on any sulfonamide derivative used so far would be complete without the warning that these preparations bear toxic possibilities.

Beyond a doubt, much of the toxic picture could be obliterated if sulfanilamide medication was stopped just so soon as it obviously was failing to produce cure. Practically all the favorably influenced males are symptom free by the end of the fifth day. If such a change has not occurred in that length of time it is extremely rare for further administration to be of benefit. In other words, it is perfectly safe to consider the patient who is not almost entirely free from symptoms then as a sulfanilamide failure and stop the drug.

Later courses of sulfanilamide almost never have a controlling effect in the same case, but it has been shown that sulfapyridine used for those patients who have obtained no curative effect from sulfanilamide not uncommonly exercise a favorable response.

There are many schemes of dosage for sulfanilamide in this disease, most of which have been aimed at a prompt high concentration of blood which later can be maintained on a reduced dosage. That blood concentration is not the sole consideration is shown by the experiences of Van Slyke, Thayer and Mahoney, who numbered some of their successes among cases showing the lowest blood concentrations and some of their failures among those in which the concentration was enormous.

Perhaps the most common scheme of dosage in use in ambulant patients is 80 grains (5 Gm.) a day for two days, 60 grains (4 Gm.) a day for the next three days and a later continued daily dosage of 40 grains (2.5 Gm.). Many clinicians consider this too high and use 60 grains a day for three or four days and a maintenance dose of 40 grains a day thereafter. Others claim successes in equal measure on 45 grains (3 Gm.) a day for eight days and a maintenance dose of 20 grains (1.3 Gm.) a day thereafter. In bed patients, on whom the most dependable figures have been obtained, the initial dose was 120 grains (8 Gm.) a day for several days and then a gradual reduction of the dosage. To such patients the drug has been given in doses so spaced as to prevent low blood concentration during the night. Some have given larger doses at bedtime to ambulant patients for the same purpose. Many administer sodium bicarbonate in half the quantity with each dose.

Sulfanilamide should be discontinued if it produces any marked symptoms of toxic action, and it never should be given to patients who cannot be seen by the physician at most every forty-eight hours. Because of its possible production of dizziness, it should be given with extreme caution or not at all to men in hazardous occupations.

From the foregoing it will be seen that much of the problem remains exactly as it was before the introduction of sulfanilamide. There is the same need for an understanding of the disease itself and those methods of treatment which have stood the test of time. By a sensible combination of the two one has no need for depression or the development of a defeatist attitude. In fact, the physician is standing on far better ground than he did a short time ago, for it has been shown beyond any doubt that, even in those cases in which sulfanilamide does not bring about cure, its use early in the disease almost invariably makes it a milder disease thereafter and enormously reduces the likelihood of serious complications.

There are a number of facts that one should have constantly in mind regarding gonorrhea. These might be stated briefly as follows:

1. Gonorrhea is a disease of tissue penetration by the gonococcus wherein the germs reach tissue depths far out of the bactericidal powers of the drugs applied locally.

2. Cure is brought about by the patient's own tissue processes.

3. These can be enhanced by the direct application of mild chemical solutions to the infected regions and the promotion of better drainage.

4. Certain factors greatly reduce or obliterate these tissue responses, namely the ingestion of alcoholic beverages, sexual excitement, prolonged physical exertion and the inhalation of the fumes of alcohol, ether and perhaps some other substances.

5. Thus the one "priceless ingredient" of all curative effort is patient cooperation to the end that these circumstances do not occur.

6. The greater the patient cooperation and the gentler the treatment (within limits), the milder and shorter is the disease and the fewer are its complications.

7. Treatment of this disease is entirely empirical in that we have not the slightest knowledge of just how it accomplishes its purpose.

8. Traumatic methods have no place in treatment; they prolong disease and precipitate complications.

9. Aside from sulfanilamide and its companion drugs, oral medication has been signally lacking in curative influences.

10. Some drugs, notably oil of santal, at times reduce discharge and discomfort, though they exercise no definite curative effect.

Many drugs have been employed for the local treatment of gonorrhea, but year after year these gradually have been reduced in number until today we find but a few that are in general use. Countless numbers of these have fallen into disuse because of the extravagant claims that their introducers made for them or the fact that many of them bore proprietary names and differed so little from pharmacopeial drugs that their higher cost was not merited. I need fear no successful contradiction if I make the statement that none of the proprietary preparations of silver are of more value in the local treatment of this disease than are those in the pharmacopeia. Of the drugs most commonly used for local treatment to the mucous membranes of the urinary tract, together with their most appropriate strengths, might be mentioned those in the accompanying table.

There are times when it is wise to use oral sedatives either for the prevention of penile erections or for the relief of pain and vesical discomfort. For the former, sodium bromide in doses of from 10 to 15 grains (0.6 to 1 Gm.) at night is rather commonly used. For sensory disturbances some form of opium is to be preferred. Of these, camphorated tincture of opium in drachm (4 cc.) doses or tincture of hyoscyamus in from 15 to 20 minim (1 to 1.3 cc.) doses usually suffice for the milder symptoms. For the more severe, codeine in from one-fourth to one-half grain (0.016 to 0.032 Gm.) doses, morphine in from one-eighth to one-fourth grain (0.008 to 0.016 Gm.) doses or rectal suppositories containing one-fourth grain of belladonna and 1 grain (0.065 Gm.) of powdered opium may be required. Some urge the value of mild alkalis and more generally use either postassium acetate or citrate in doses of from 10 to 20 grains (0.65 to 1.3 Gm.).

*Drugs Most Commonly Used for Local Treatment of Gonorrhea*

| | Strengths | Best |
|---|---|---|
| Potassium permanganate (U. S. P.) | 1: 10,000 to 1: 3,000 | 1: 8,000 |
| Mild protein silver (U. S. P.) | 3 to 10 per cent | 5 per cent |
| Strong protein silver (U. S. P.) | 0.25 to 1 per cent | 0.5 per cent |
| Acriflavine (U. S. P.) | 1: 5,000 to 1: 1,000 | 1: 3,000 |
| Silver nitrate (U. S. P.) | 1: 10,000 to 1: 1,000 | 1: 5,000 |

Regarding the use of chemicals to the urethra and bladder by means of injections or irrigations by hand, there are a number of facts that should be borne in mind, the most important of which are as follows:

1. One or two applications in twenty-four hours usually is of greater benefit than a larger number.

2. All applications cause a purulent response from the anterior urethra and if their response lasts more than an hour or two the chemical is too strong for the given urethra and its strength should be reduced.

3. All chemicals used over too long a period have a tendency to keep up the urethral discharge.

4. The appearance of many epithelial cells in the urethral discharge is positive evidence that the medication is too strong or has been used for too long a time.

5. Fluids should not be injected into the posterior urethra if only the anterior portion is infected.

6. If fluids are to be held in the anterior urethra without being forced into the posterior urethra, the quantity injected should not exceed 6 cc.

7. If fluids are to be injected into the posterior urethra, it should be done either by low hydrostatic pressure or with the utmost gentleness by means of a bulb syringe with a blunt nozzle.

8. No instruments of any kind should be passed into the canal while the gonococcus is present.

9. Sudden marked changes for the worse in the patient's condition almost invariably denote poor cooperation.

10. The two glass test, properly interpreted, is the simplest way of following the course of the disease.

11. The amount of clouding of the voided urine is a safe index of the activity of the infection.

12. Even in the most favorable of the sulfonamide cases the urine becomes clear before the disease is cured. Hence a clear urine is by no means an evidence that the gonococcus has been eradicated.

As an appropriate scheme of treatment for this disease it is felt that a sulfonamide derivative in one of the suggested dosages might be given for the first five days. If at the end of this time the patient has no urethral discharge and has a clear urine, a maintenance dose of the drug should be continued for ten days longer, in the absence of toxic symptoms. If the local symptoms do not abate or if the drug must be stopped, the accompanying plan should be followed, which plan, with a few slight alterations, is that appearing in the 1937 *Proceedings of the American Neisserian Medical Society*.

PLAN OF TREATMENT

*Anterior Urethritis.*—1. After urination the anterior urethra is cleansed with 1: 10,000 to 1: 5,000 solution of potassium permanganate either by low pressure irrigations or by gentle hand injections by means of a syringe.

2. By means of a bulb syringe not more than 6 cc. of a 5 to 10 per cent solution of mild protein silver (U. S. P.) or from 0.25 to 0.5 per cent strong protein silver (U. S. P.) is injected into the urethra and kept there for five minutes. (The weaker strengths are better.)

3. Such treatments are carried out daily until there is no urethral discharge and then every other day. If the latter interval proves too long, as evidenced by the recurrence of discharge, daily treatments should be resumed for a few days and the interval again increased. Later, when safe to do so, the interval is increased to every third day.

4. If the patient cannot visit the physician frequently enough for this regimen to be carried out, a one-eighth ounce glass syringe and 0.25 or 0.5 per cent solution of strong protein silver (U. S. P.) is ordered with instructions to use it twice a day.

5. It is safest not to try the ordinary tests of cure for patients under either of these two plans of treatment before the end of the fifth week in the most favorable of cases. (This does not apply to the real or seeming sulfonamide successes.)

6. Every effort should be made to obtain the patient's cooperation and no local treatment should be placed in his hands without the most explicit instructions as to their proper use.

7. Such patients should have described to them the symptoms of posterior urethral involvement and told to stop local treatment and present themselves at the physician's office if they occur.

*Posterior Urethral Involvement.*—1. Local urethral treatments should be stopped until the acute symptoms subside.

2. Acute symptoms can be controlled with sedatives and hot hip-baths.

3. After vesical comfort has been regained entirely, low pressure intravesical irrigations of potassium permanganate solution should be given at intervals of two or three days.

4. Prostatic or seminal vesicular manipulations should be avoided until the second glass of urine is clear and the first is almost clear.

5. One should start massage with the very gentlest prostatic strokings and, if it causes a return of urethral discharge, one should wait a week before trying again. If it causes no such recrudescences of symptoms it should be repeated at intervals of from three to four days, the pressure being gradually increased at subsequent visits but never reaching a point of roughness.

6. The massages should be continued at these intervals until the prostatic secretion is free of pus.

7. During the first month or six weeks of prostatic massage it is well to carry out a preliminary intravesical irrigation, some of the solution being left in the bladder to be voided after the massage. If after this time the irrigations are discontinued, there rarely will be any shreds in the urine when the patient is ready for dismissal.

### TESTS OF CURE

The use of sulfanilamide in gonorrhea has thrown a deep cloud of uncertainty over the older tests of cure. So true is this as to make it absolutely necessary to use methods that formerly were little needed in the male. Before this drug came into use one was almost 100 per cent safe in pronouncing a patient cured who had no urethral discharge and in whom a discharge could not be made to occur by the ingestion of alcohol, sexual excitement, the passage of a sound with massage of the urethra or whose discharge occasioned by a provocative injection of 1 per cent silver nitrate failed to show the gonococcus.

On those patients seemingly cured by sulfanilamide these simple procedures are sadly lacking in value, for such patients rarely experience a recrudescence of symptoms after the three first procedures, and their discharges commonly fail to show gonococci after the use of silver nitrate even though the gonococcus is present in the tissues. The safety of the patient and the protection of his possible contacts demand more careful tests of cure than these. In them the most careful and repeated searches of the washed sediments of the first urine voided following the aforementioned tests of cure should be carried out. Before such urine is voided the prostate, seminal vesicles and urethra should be stripped, so that their fluids are in the urine. Added to this, cultures for the gonococcus assume a place of enormous importance. And, no matter how carefully all these tests are carried out, some infected persons are almost sure to be passed back into sexual activity. Complement fixation tests are of little aid in the pronouncement of cure.

Because of the inferential character of all tests of cure, every patient should be warned against coitus without the use of a condom for some weeks after supposed cure.

### OTHER TREATMENTS

An article such as this would be incomplete if no mention was made of biologic substance such as vaccines, filtrates and antitoxins, and prolonged hyperthermia. The biologic substances can be dismissed with the statement that, as a class, they have given about the poorest results of any seemingly sensible treatment.

Prolonged hyperthermia cannot be dismissed in so summary a fashion. That prolonged elevations of the body temperature above 106 F. will cure gonorrhea in many cases is beyond question. That lower temperatures are less efficient and require more sessions of treatment also is established. It is equally certain that the method has dangers that are not to be viewed lightly and a mortality far greater than has the disease itself. The method requires equipment, trained personnel and time, which puts it out of the reach of the masses except, perhaps, when it is done experimentally. It is the opinion of Carpenter and Warren and their co-workers, who have done the most scientific work along these lines to date, that, in the male, it should be used for only those patients who resist cure by other methods and in the treatment of the graver complications of the disease. Such a view limits the urgent need for prolonged hyperthermia to a point where a physician has no cause to feel that he is guilty of denying his patient the best because he does not urge it. Almost all cases of gonorrhea in the male can be cured by other means and few of the complications, other than arthritis, are of such gravity or so resistant to treatment that they do not subside within a short time under less dangerous and less uncomfortable modes of attack.

1737 Chestnut Street.

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

HOWARD A. CARTER, Secretary.

THE COUNCIL WISHES TO EXPRESS ITS APPRECIATION FOR THE VALUABLE ASSISTANCE RENDERED IN THE PREPARATION OF THIS REPORT BY DRS. C. C. BUNCH, GEORGE M. COATES, EDWIN P. FOWLER, AUSTIN A. HAYDEN, ISAAC H. JONES, DOUGLAS MACFARLAN, C. STEWART NASH, HORACE NEWHART, BURT R. SHURLY AND WILLIAM P. WHERRY.

HOWARD A. CARTER, Secretary.

### TENTATIVE MINIMUM REQUIREMENTS FOR ACCEPTABLE ELECTRIC HEARING AIDS

A hearing aid to be acceptable to the Council on Physical Therapy of the American Medical Association must substantially improve the hearing of the deafened ear for which it is prescribed or fitted. Firms shall meet the following:

1. Hearing aids shall have imprinted on each transmitter, air or bone conduction receiver a model number (type or class) or some equally suitable identification.

2. The manufacturer shall supply the Council on Physical Therapy with a graph giving the amount of amplification in decibels at semioctave intervals of C from 256 to 4,096. Tests should be made for any peaks or valleys between these points and if found should be specified.

3. The manufacturer shall state the voltage and current consumption at maximum setting.

4. The hearing aid shall be reasonably free from disturbing noises (sizzling, frying, humming, clicking and whistling sounds).

5. The manufacturer shall furnish to the Council a copy of its guaranty to the consumer.

6. There shall accompany each hearing aid clearly written instructions for its use.

7. The manufacturer shall give evidence that adequate facilities for servicing the instruments are available and shall furnish names and addresses of servicing agencies.

8. The manufacturer shall agree to furnish from stock to the Secretary of the Council on Physical Therapy a hearing aid for inspection and test. On the request of the Secretary, the manufacturer shall supply him with an order on any of the authorized agents for an instrument for tests. On the completion of tests, the instrument shall be returned complete to the manufacturer.

9. All material used in manufacture shall be of first grade and the workmanship skilfully performed.

10. The firm shall be responsible for the ethical merchandising practices and financial status of their agents, sales representatives and service men. The standards of merchandising and the acceptability of advertising shall meet the Rules of the Council on Physical Therapy.

These requirements go into effect Jan. 1, 1941.

## LEPEL SHORT WAVE MACHINE, MODEL TC, ACCEPTABLE

Manufacturer: Lepel High Frequency Laboratories, Inc., 39 West Sixtieth Street, New York.

The Lepel Short Wave Machine, Model TC, is used for medical and surgical diathermy in the office or hospital. It is a single cabinet model with dimensions of 38 by 24 by 16 inches and weighs approximately 175 pounds. Condenser electrodes, induction cable, air-spaced electrodes and direct contact metal electrodes (an unusual method of short wave application) are included with the unit.

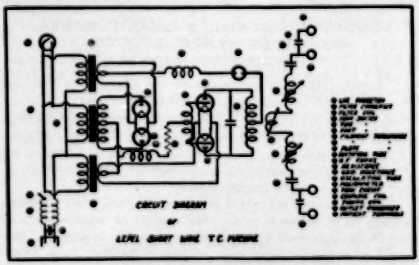
Lepel Short Wave Machine, Model TC.

Providing a 12 meter wavelength, the unit employs four tubes in what is stated by the manufacturer to be an individual Lepel circuit. It operates on 60 cycles, 105 to 130 volts. Precautions have been taken to suppress radio interference by installing filters at various locations in the circuit.

Outlets are provided for electrosurgery and short wave treatment; ultraviolet quartz lamps may also be energized from the treatment terminals. A time switch may be set to cut off treatment periods automatically.

Investigations under the auspices of the Council demonstrated an output of 400 watts by the lamp load method and with a maximum input of 1,200 watts. The temperature of the transformer after two hours of continuous operation at full load came within the limits of safety.

The manufacturer furnished tests from a reliable physician regarding the capacity of the unit to produce heat deep within human tissue. The period of current flow in each application was twenty minutes. The technic and results were as follows:



Schematic diagram of circuit.

Air Spaced Flexible Disk Electrode Technic: The diameter of the disk was 7 inches, space under the disk 1¼ inches, and distance between the nearest edges of the disks 5 inches; the average thigh circumference was 18½ inches, average room temperature 77 F. and average room humidity 49. The average temperatures (F.) of six observations are given in table 1.

TABLE 1.—*Observations with Air Spaced Flexible Disk Electrode Technic*

| Deep Muscle | | Rectal | |
|---|---|---|---|
| Initial | Final | Initial | Final |
| 97.5 | 105.9 | 99.6 | 99.8 |

Cuff Technic: The upper cuff was 1¾ by 17¼ inches, the lower cuff was 2 by 14½ inches, and the distance between the nearest edges of the cuffs was 5 inches. The space under the cuffs in test 1 was one-half inch; in test 2, 1¼ inches; in test 3, 1¼ inches; in test 4, 1½ inches; in test 5, 1¾ inches, and in test 6, 1¾ inches. The average thigh circumference was 19 inches, the average room temperature was 74 and the average room humidity 36. The average temperatures (F.) of six observations are given in table 2.

Coil Technic: The number of turns was five and the distance between the turns was 1 inch. The average thigh circumference was 19¾ inches, the average room temperature 74.5, and the average room humidity was 42. The average temperatures (F.) of six observations are given in table 3.

TABLE 2.—*Observations with Cuff Technic*

| Deep Muscle | | Rectal | |
|---|---|---|---|
| Initial | Final | Initial | Final |
| 98.3 | 105.6 | 99.3 | 99.2 |

TABLE 3.—*Observations with Coil Technic*

| Deep Muscle | | Rectal | |
|---|---|---|---|
| Initial | Final | Initial | Final |
| 96.5 | 105.0 | 99.5 | 99.8 |

Metal Contact Plate Technic: The width of the plate was 5½ inches, the length of the plate 8 inches, the average thigh circumference 19½ inches, the average room temperature 76 and the average room humidity 45. The spacing between the nearest edges of the plates in test 1 was 2¾ inches; in test 2, 5 inches; in test 3, 4¾ inches; in test 4, 4½ inches; in test 5, 4½ inches, and in test 6, 4½ inches. The average temperatures (F.) of six observations are given in table 4.

TABLE 4.—*Observations with Metal Contact Plate Technic*

| Deep Muscle | | Rectal | |
|---|---|---|---|
| Initial | Final | Initial | Final |
| 99.3 | 106.2 | 99.4 | 99.7 |

TABLE 5.—*Observations with Air Spaced Electrode Technic*

| Deep Muscle | | Rectal | |
|---|---|---|---|
| Initial | Final | Initial | Final |
| 99.4 | 105.2 | 98.6 | 99.7 |

Air Spaced Electrode Technic: The diameter of the disks was 7 inches, the space under the disks 1¼ inches, and the distance between the nearest edges of the disks 5 inches. The average temperatures (F.) of two observations are given in table 5.

Metal Contact Electrode Technic: The oval plates were 5½ by 8 inches and the distance between the nearest edges was 4½ inches. The average temperatures (F.) are given in table 6.

TABLE 6.—*Observations with Metal Contact Electrode Technic*

| Deep Muscle | | Rectal | |
|---|---|---|---|
| Initial | Final | Initial | Final |
| 98.2 | 105.2 | 98.1 | 98.4 |

TABLE 7.—*Observations with Pelvic Diathermy*

| Initial | Final |
|---|---|
| 97.5 | 110.1 |

Six clinical reports of pelvic diathermy submitted by the firm are abstracted as follows:

Treatments were administered with an average size metal vaginal electrode and a dispersive pad at a spacing of 16 to 18 inches. The dosage was determined by the temperature rise indicated by a thermometer inserted in the stem of the vaginal electrode. Treatment was not continued beyond the patient's sense of comfortable toleration. Temperatures were read every one or two minutes for twenty minutes. The averages of six observations are given in table 7.

The apparatus was placed in a large clinic acceptable to the Council for test and was reported satisfactory.

The Council on Physical Therapy voted to accept the Lepel Short Wave Machine Model TC for inclusion in its list of accepted devices.

## SYNCHROTONE NOT ACCEPTABLE

Manufacturer: Hallberg's Synchrotone Incorporated, 572 Madison Avenue, New York.

The Synchrotone is a short wave device which has come to the attention of the Council because of the unfounded and misleading advertising used in its promotion. In a folder called "Ultra Short Wave Therapy from the Selective Aspect" the most objectionable feature is the repeated claim that specific wavelengths have been definitely established as being valuable in the treatment of specific diseases, and that the effects of the various wavelengths are achieved independently of heat. Therapy by the apparatus is called "selective athermal." It is stated "There is no question about the effectiveness of certain wavelengths in specific cases" and "It is believed that polarity reversal may account for the effect of certain wavelengths upon specific cells in cases of malignancies because of the possible effect of specific wavelengths in altering the external and internal electrical polarity and potential reactions of cells, thus giving control of $p_H$ values with consequent control of osmotic functions." It is claimed to have been discovered and verified "that with Synchrotone 2.5 and 4.5 meter apparatus the wave possesses the power to reverse the polarity of body electrical potentials."

According to the advertising, the device is portable and may be obtained either in a three tube "Special Model" weighing 16½ pounds or a one tube "Junior Model" weighing 11½ pounds. The Special Model is said to operate at 115 volts 60 cycles and to have an output of 150 watts. It provides a wavelength between 2.75 and 4.75 meters and it is claimed that, "To obtain the specific effects desired, waves between 2.5 and 4.5 meters are recommended as clinical experience of many physicians has proven." The Council has no evidence that the "clinical experience of many physicians has proven" this point and the firm cites no specific examples to uphold its claim.

It is further claimed that the "Synchrotone will be found quite capable of supplementing the more powerful U. S. W. apparatus," despite its so-called "athermal" type of therapy. It is asserted that "it is safe to state that the belief that 'heating is the only therapeutic effect' from radio waves is rapidly weakening" and "The selective low intensity and low temperature ultra high frequency treatments, so specifically emphasized by Hallberg, are finding widespread recognition among physicians here and abroad." No evidence for these assertions was cited or is known to the Council. Finally, it is indirectly implied that the Synchrotone may be used on a variety of ills for which the Council accepts no precedent in short wave therapy. Thus, Dr. J. Samuels is given as an authority for the use of "heatless radio waves . . . for diabetes and to relieve malignant conditions by the treatment of the pituitary, thyroid and gonads. X-rays and Radium are not used and no attempt is made to radiate the tumor as it is considered secondary to the systematic condition. The hormone stimulation of the different glands mentioned is accomplished entirely without heat generation in the body." Among other "important authorities," Schereschewsy is said by Mr. Hallberg to have experienced a "selective effect in ultra short wave therapy." But he neglects to point out that Schereschewsy later withdrew these claims.

Mr. J. Henry Hallberg is credited by the folder as being the main discoverer of the value of specific ultra short wave therapy. He is called "the father of the ultra short wave specific therapy in the world" and, it is said, "The first to make public the physiological therapeutic possibilities of vacuum tube generated radio waves was J. H. Hallberg." He stated that he had reported some of his observations to the "Physio-Therapeutic branch of the A. M. A." No such branch is known.

Mr. Hallberg also promotes an "Alkaline ($p_H$) Testing Outfit for the Human Body." A drop of the indicator solution when placed in the center of the palm is said to indicate the "alkaline condition," or by the same solution the "absolute condition" of the urine or "other secretions of the body" may be indicated. Mr. Hallberg states that "This outfit is really a check-up on the system and when used in conjunction with my blanks for Acid or Alkaline Diet Control, giving the values for almost all essential foods, permits anyone to select the correct food combinations for maintaining almost any desired alkaline condition of the system."

The Council on Physical Therapy voted not to accept the Synchrotone for inclusion on its list of accepted devices because of the misleading and unscientific promotional methods of the firm, which encourage irrational therapeutic practices.

# Council on Pharmacy and Chemistry

## NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

**SODIUM CACODYLATE** (See New and Nonofficial Remedies, 1939, p. 104).

The following dosage forms have been accepted:

*Ampuls Sodium Cacodylate-Malbie, 0.1 Gm. (1½ grains) 1 cc.*
Prepared by the Malbie Chemical Co., Newark, N. J.
*Ampuls Sodium Cacodylate-Malbie, 0.2 Gm. (3 grains) 1 cc.*
Prepared by the Malbie Chemical Co., Newark, N. J.
*Ampuls Sodium Cacodylate-Malbie, 0.325 Gm. (5 grains) 1 cc.*
Prepared by the Malbie Chemical Co., Newark, N. J.
*Ampuls Sodium Cacodylate-Malbie, 0.5 Gm. (7½ grains) 5 cc.*
Prepared by the Malbie Chemical Co., Newark, N. J.
*Ampuls Sodium Cacodylate-Malbie, 1.0 Gm. (15½ grains) 5 cc.*
Prepared by the Malbie Chemical Co., Newark, N. J.

**BISMUTH SUBSALICYLATE** (See New and Nonofficial Remedies, 1939, p. 141).

The following dosage forms have been accepted:

*Ampoules Bismuth Subsalicylate with Chlorobutanol in Oil, 1 cc.:* Each cubic centimeter contains bismuth subsalicylate-U. S. P. 0.13 Gm. (2 grains) and chlorobutanol 0.03 Gm. (0.46 grain), suspended in sweet almond oil.

Prepared by the Upjohn Company, Kalamazoo, Mich. No U. S. patent or trademark.

*Bismuth Subsalicylate with Chlorobutanol in Oil, 30 cc. Vials:* Each cubic centimeter contains bismuth subsalicylate-U. S. P. 0.13 Gm. (2 grains) and chlorobutanol 0.03 Gm. (0.46 grain), suspended in sweet almond oil.

Prepared by the Upjohn Company, Kalamazoo, Mich. No U. S. patent or trademark.

**DECHOLIN SODIUM** (See New and Nonofficial Remedies, 1939, p. 134).

The following dosage form has been accepted:

*Ampoules Solution Decholin-Sodium, 20 per cent, 3 cc.*
Distributed by Riedel de Haen, Inc., New York.

**UREA** (See New and Nonofficial Remedies, 1939, p. 480).

The following product has been accepted:

**Urea Pure Crystals-Mallinckrodt.**—A brand of urea-N. N. R.

Manufactured by Mallinckrodt Chemical Works, St. Louis, Mo. No U. S. patent or trademark.

**DEXTROSE** (See New and Nonofficial Remedies, 1939, p. 160).

The following products have been accepted:

The Drug Products Company, Inc., Long Island City, New York.

*Hyposols Dextrose 10 Gm. (Buffered), 20 cc.:* Each hyposol contains 20 cc. of a solution containing dextrose-U. S. P. 10 Gm. buffered with sodium biphosphate 18 mg. and sodium phosphate dibasic 6 mg.

*Hyposols Dextrose 25 Gm. (Buffered), 50 cc.:* Each hyposol contains 50 cc. of a solution containing dextrose-U. S. P. 25 Gm. buffered with sodium biphosphate 45 mg. and sodium phosphate dibasic 15 mg.

**COD LIVER OIL** (See New and Nonofficial Remedies, 1939, p. 506).

**Stearns Cod Liver Oil.**—It has a vitamin A potency of not less than 850 units (U. S. P.) per gram and a vitamin D potency of not less than 85 units (U. S. P.) per gram.

*Dosage.*—Two teaspoons daily or as directed by the physician.

Prepared by Frederick Stearns & Company, Detroit. No U. S. patent or trademark.

Stearns cod liver oil complies with the U. S. P. standards for cod liver oil.

**THIAMIN CHLORIDE-SQUIBB** (See New and Nonofficial Remedies, 1939, p. 499).

The following additional dosage form has been accepted:

*Tablets Thiamin Chloride-Squibb, 10 mg.*

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MAY 11, 1940

## THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

**The American Medical Association advocates:**

**1. The establishment of an agency of the federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.**

**2. The allotment of such funds as the Congress may make available to any state in actual need, for the prevention of disease, the promotion of health and the care of the sick on proof of such need.**

**3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.**

**4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.**

**5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.**

**6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.**

**7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.**

**8. Expansion of public health and medical services consistent with the American system of democracy.**

## WAGNER-GEORGE HOSPITAL BILL AS REPORTED TO THE SENATE

Elsewhere in this issue of THE JOURNAL (page 1927) appears an analysis of the hospital construction bill reported favorably, and it is understood unanimously, by the Senate Committee on Education and Labor, April 30. The committee retained some of the provisions of the original Wagner-George bill, inserted some of the provisions of the Taft plan, and added other provisions of its own. Some of the suggestions advocated by representatives of the American Medical Association and of hospital associations are found in the reported bill. The National Advisory Hospital Council will assume a more important role than was contemplated in the original Wagner-George bill only during the first year of the operation of the program, for only with respect to applications for hospital projects to be undertaken with appropriations to be made available during that year will the approval of the council be necessary. Grants for maintenance are contemplated if the financial resources of the applicant are insufficient to maintain and operate the hospital adequately. During the first year of the operation of the program, the bill proposes that hospital projects shall be financed by the federal government and leased to the applicant, the title to such projects eventually being conveyed to the lessee. After the first year, federal grants will be made available for five years to assist applicants to construct hospital facilities, the title to which shall remain in the applicant. The bill still leaves in considerable doubt what disposition shall be made of hospital projects the leases for which shall have been canceled, but the fact that grants for maintenance are contemplated may minimize the probability of lease cancellations. The definition of the term "hospital" included in the bill is a synthetic one and raises the question as to whether "hospitals" constructed under the bill are to enter into the practice of medicine; one does not ordinarily consider a hospital as including "health, diagnostic or treatment centers, the equipment thereof, and facilities relating thereto." The fact that additions to existing hospital facilities, as well as the building of new hospitals, will be possible under the reported bill constitutes an improvement over the original proposal. As previously pointed out in THE JOURNAL, this federal program for hospital construction places a grave responsibility on the Surgeon General of the Public Health Service, but that responsibility can well be shared with the National Advisory Hospital Council, particularly if the members selected by the Surgeon General with the approval of the Federal Security Administrator actually include leading medical and scientific authorities "who are outstanding in matters of hospitals and other public services."

The Senate Committee on Education and Labor, in reporting this bill, said that the hospital building program was only a step toward the solution of health problems which have received the attention of the committee for the last several months. The program is designed to fit into a more comprehensive plan being formulated by the committee.

The committee's report emphasized the belief that in proposing legislation to promote hospital construction the President had a broader vision of purpose than the mere supplying of beds on which the sick may lie. The hospital as a public diagnostic center, the report continues, enables the physician to provide a better service in the home and for the ambulatory sick treated in his private office. Through its laboratory the hospital offers the means for services essential to the saving of lives, such as the immediate typing of sputum in pneumonia, the rapid determination as to whether cancer exists in excised tissues, the pathologic nature of the body fluids and excretions, and other determinations which make diagnoses scientifically accurate. With a hospital as a collecting point and with facilities for making such special tests as he may require, a specialist can, in the opinion of the committee, on a single visit to a community give advice and assistance

to numerous patients brought to his attention by local physicians. The county health officer can best control an epidemic when he has laboratory facilities to detect the carriers of infection and the isolation facilities for segregating the sick, and the county public health nurse can best help to prevent tuberculosis when she knows which member of the family or what associate is a carrier. The hospital will provide the sputum examination and the x-ray examination on which such knowledge is based.

The committee refers to statistics to show that among the counties of the United States 1,338, with a population of 17,000,000, do not contain a registered general hospital. The report fails to state, however, how many of such counties have accessible general hospitals near enough so that the needs of such counties may be adequately served. According to the committee the provisions of the reported bill will apply to communities where adequate facilities do not exist and where there is no evidence that in the normal course of events private hospital construction will ever meet community needs. The committee predicates its approval of the reported bill on its acceptance of the premise that it is a function of government to preserve the person as well as the property of man and that there can be no national progress except through promoting the health and welfare of the citizens of the nation.

## INFECTION AND IMMUNITY IN VIRUS DISEASE

Virus infections progress from one host to another by methods already familiar in bacterial and protozoan diseases. Some are transmitted by direct contact through the skin and mucous membranes, others are spread by secretions from the upper respiratory tract, by the bites of insects and by coitus. There is, however, a general absence of virus diseases of the gastrointestinal tract of man.

The basic immunologic phenomena of virus diseases are also similar to those operative in other fields of biology. Some virus diseases—for example rabies and vaccinia—attack many species of hosts; others are highly specific for certain species.[1] Climate, sex, age, nutrition and genetic factors have all been shown to enter into the picture of natural immunity to certain virus infections. In man recovery from virus infection is usually followed by enduring active immunity, which in many instances may be operative during the remainder of an individual's life. Exceptions to this rule are the common cold and herpes, or fever blisters. Associated in most, but not in all, instances of the development of active immunity against viruses is the appearance of humoral antibodies in the serum of those who are immune. It appears, however, that the presence of demonstrable amounts of neutralizing antibodies and immunity or resistance to virus diseases do not necessarily parallel each other. These facts indicate that the presence of humoral antibodies does not wholly explain the immunity to virus infections.

A curious aspect of the problem of immunity is contributed by the present knowledge of latent virus infections. Andrewes,[2] in his presidential address before the Section of Comparative Medicine of the Royal Society of Medicine, considers several varieties of such latent infections. After an overt attack of a virus disease, he points out, the responsible agent may continue to be harbored by a host long after the disease symptoms have disappeared. Poliomyelitis virus, for example, has been recovered from nasal washings of man during convalescence. Indeed, he says that many have sought to explain the long continued immunity which follows many virus infections as being an infection immunity, i. e. an immunity which persists only because the virus has never been completely eliminated from the body. Andrewes also calls attention to what he calls "indigenous" plant and animal viruses. Latent plant virus infections may render the host plant refractory to infection with a related but more virulent strain of virus. Among the indigenous animal viruses he mentions lymphocytic choriomeningitis in mice, herpes simplex, virus III of rabbits, mouse pneumonia viruses and the complicated swine influenza virus. The fundamental contributions to be made by studies of latent virus infections appear to be still in their infancy.

It is now known, as pointed out by Gordon in the Harvard Symposium,[3] that most viruses have distinct host preferences, and the clinical disease produced in that host is fairly well stabilized. Thus the effect of neurotropic yellow fever virus on the rhesus monkey is not that of the native pantropic strain. The peculiar and unusually severe pneumonia that characterizes human infection with the virus of psittacosis lacks a counterpart in the disease of the natural host. Such factors play a definite part in the resistance both of the individual and of the community and thereby affect both endemic and epidemic patterns.

The most promising preventive measures thus far developed depend on the use of convalescent serums and vaccines. At present the immune serum in most widespread practical use is probably that which has been developed for measles. Attempts to employ immune serums have been made also in other virus diseases such as poliomyelitis. Vaccines have proved hopeful in a number of diseases of this group. The methods devised for the cultivation and preparation of vaccinia virus may be extended to investigations on other virus diseases.

1. Rivers, Thomas M.: Viruses and Virus Diseases, Lane Medical Lectures, Stanford University Press, 1939.

2. Andrewes, C. H.: Latent Virus Infections and Their Possible Relevance to the Cancer Problem, Proc. Royal Soc. Med. 33:75 (Dec.) 1939.

3. Gordon, John E.: Epidemiologic Problems in Virus Diseases, in Harvard School of Public Health Symposium Volume, Harvard University Press, 1940.

Finally, no account of active measures for producing immunity would be complete without mention of recent developments in the prevention of yellow fever by means of vaccines. After many attempts, during most of which it was necessary to include the use of immune serum with the vaccine, a culture was finally obtained which, after suitable testing, has been employed on more than a million individuals. Untoward results have not occurred and there is every reason to believe that the vaccine is efficacious. This vaccine was developed by means of tissue culture methods. Attempts to employ chemotherapy in certain virus diseases have achieved no notable successes. Most reports of the use of sulfanilamide or its derivatives have been discouraging, but with the frequent discovery of new chemical compounds it is still possible that effective chemical methods of treatment may be developed.

### THE PUBLIC BE WARNED

Recently preparations containing sex hormones have been promoted to the public with extraordinary enthusiasm. Principal among these are preparations containing female sex hormones. Elsewhere in this issue is an article by Eller and Wolff [1] reviewing the present status of hormones and vitamins in cosmetics.

THE JOURNAL has fought for years against the indiscriminate promotion to the public of preparations which are dangerous or potentially dangerous, as well as those for which value has not yet been established. THE JOURNAL'S activities in this respect have been in the interests of the public health. A substance which may be exceedingly useful in the hands of physicians could gain ill repute from untoward effects following its promiscuous, ill advised and unwise use in self medication by the layman. THE JOURNAL has been constantly fearless in forewarning against possible ill effects, rather than waiting until such effects have ensued. Such has been the case with the female sex hormones. THE JOURNAL has maintained that the indiscriminate and long-continued use of female sex hormones or other potent remedies by laymen may lead to dangerous consequences; that such use of hormones in significant amounts possesses the potentiality of bringing about serious changes in the genital and reproductive organs of women; that it may induce changes in the breast and even may have a potentiality for cancer in women having a family history of cancer. If not used in significant amounts, the substance is, of course, of no value for any purpose. THE JOURNAL knows of no evidence which would cause it to change its opinion in this regard. The estrogens have a definite and, as time goes on, a more clearly defined place in modern therapeutic armamentariums—more particularly in the case of the estrogen-deficient woman. But they are not innocuous! They should not be employed except in cases in which experience teaches that they are indicated. The layman is certainly not qualified to determine his or her own endocrine balance. Not only may there be no need for extra estrogens but an actual abundance of them may be present.

The endocrine balance of any person is a delicate adjustment; the use of potent glandular preparations to the point where they change that balance may lead to unusual and undesirable results. Obviously there is no evidence to justify the incorporation of sex hormones in preparations sold directly to the public. Those who have the best interests of the public at heart will, in our opinion, have no part in any such enterprise.

1. Eller, J. J., and Wolff, Shirley: Hormones and Vitamins in Cosmetics, this issue, page 1865.

## *Current Comment*

### CASE FOR PRIVATE PRACTICE

In the issue for May of *Nation's Business* appears a special supplement entitled "The Case for Private Medicine." It is a twenty-four page story of the campaign that has been waged in recent years to force the medical profession into regimentation, and of the manner in which this campaign has been combated by the medical profession. It discusses also the state of health of the nation, and the reasons why medicine in a democracy should not be submitted to bureaucratic control. The supplement called "The Case for Private Medicine" is the fifth in a series which this magazine has been making available, the previous supplements covering "Insurance," "Investment Banking," "Power and Light" and "Distribution." Reprints of the pamphlets covering "Distribution" and "The Case for Private Medicine" are available through the *Nation's Business* at 10 cents a copy or $6 a hundred, which just about covers the cost of printing. Every physician should become familiar with this item; it may be had by writing to the *Nation's Business,* United States Chamber of Commerce Building, Washington, D. C. This periodical, which, incidentally, is the official organ of the Chamber of Commerce of the United States, itself circulates 350,000 copies to members of that organization. In presenting this article the *Nation's Business* provides first an adequate statement under the title "Give the Doctors a Hand," pointing out that it is the duty of commerce to aid medicine in resisting the march of collectivism. The article as a whole is prefaced by the statement made by Prince Otto von Bismarck, the father of social insurance, who said:

> A beginning must be made with the task of reconciling the laboring classes with the State. Whoever has a pension assured to him in his old age is much more contented and easy to manage than the man who has no such prospect. Compare a servant in a private house and one attached to a Government office or to the Court; the latter, because he looks forward to a pension, will put up with a great deal more. . . .

There are also numerous illustrations and a wide variety of quotations from writings that have been published on the subject. Every one will find this the most interesting document that has yet been made available in medicine's campaign for freedom.

# ORGANIZATION SECTION

## REPORTS OF OFFICERS

***NOTE.—At the 1925 session of the Association, the House of Delegates suggested that all reports of officers, committees, etc., and resolutions to be brought before the House, if available, be published in advance of the session so as to permit careful consideration and discussion.—Ed.***

### REPORT OF THE SECRETARY

*To the Members of the House of Delegates of the American Medical Association:*

The following annual report of the Secretary is respectfully submitted:

#### Membership

Within the last five years the membership of the American Medical Association was increased by more than 15,000. Toward the end of the year 1939 there were slightly more than 115,000 names on the membership list. On March 1, 1940, the number of enrolled members was 115,381, representing a gain of 3,171 since the same date in 1939. Gains in membership were recorded in forty-six constituent associations between March 1, 1939, and March 1, 1940, while losses were recorded in seven. The smallest reduction in the number of members of any constituent association was one and the largest was thirty-five.

Under the provisions of the by-laws of some constituent state medical associations, members in arrears in the payment of dues on January 1 are dropped from the rolls. In some other constituent associations dues must be paid on or before April 1 each year, and in a few associations an even longer period of grace is allowed. It is respectfully suggested that the keeping of membership records might be simplified and the costs of maintaining such records reduced to some extent if all component county medical societies and constituent state and territorial medical associations could adopt the plan of having the fiscal year correspond to the calendar year.

#### Fellowship

On March 1, 1940, the official Fellowship roster carried 71,168 names, as compared with 69,468 on the same date in 1939. Commissioned medical officers of the United States Army, the United States Navy and the United States Public Health Service were enrolled as Fellows to the number of 3,107 on March 1, 1940.

During 1939, the deaths of 789 Fellows were reported, while 1,334 Fellows resigned their Fellowship. In most instances the resignations came from physicians who have retired or who were contemplating immediate retirement.

#### Reapportionment of Delegates

It is required, under the provisions of section 3, chapter I of the By-Laws, that a reapportionment of delegates shall be made every third year. This was last done at the annual session held in Atlantic City in 1937 and it is therefore necessary that a reapportionment shall be effected at the New York session in 1940 for the years 1941, 1942 and 1943.

#### Proposed Amendment to the Constitution

At the annual session held in St. Louis in 1939 the Judicial Council, through its Chairman, submitted to the House of Delegates the following proposed amendment to the Constitution:

***Resolved,*** **That the Constitution of the Association be amended by the insertion of the words "holding the title Doctor of Medicine or Bachelor of Medicine" between the words "associations" and "are" in article 8, section 1, third line.**

This proposed amendment having been submitted in 1939 will, under the provisions of the Constitution, be before the House of Delegates for action at the New York session.

*Organization of Constituent State Medical Associations, April 1, 1940*

| | Number of Counties in State | Number of Component Societies in State | Organization of Constituent State Associations: Number of Counties in State Not Organized 1939 | 1940 | Number of Physicians in State A.M.A. Directory | Number of Members of State Associations 1939 | 1940 | Number of A.M.A. Fellows in State |
|---|---|---|---|---|---|---|---|---|
| Alabama | 67 | 67 | .. | .. | 2,073 | 1,559 | 1,591 | 569 |
| Arizona | 14 | 13 | 1 | 1 | 502 | 329 | 369 | 257 |
| Arkansas | 75 | 60 | 11 | 11 | 1,830 | 1,008 | 1,053 | 433 |
| California | 58 | 49 | 10 | 8 | 11,276 | 6,210 | 6,542 | 4,415 |
| Colorado | 63 | 37 | .. | 1 | 1,293 | 1,140 | 1,165 | 720 |
| Connecticut | 8 | 8 | .. | .. | 2,508 | 1,690 | 1,701 | 1,059 |
| Delaware | 3 | 3 | .. | .. | 326 | 209 | 227 | 136 |
| Dist. of Columbia | .. | .. | .. | .. | 2,141 | 849 | 883 | 629 |
| Florida | 67 | 34 | 19 | 17 | 1,073 | 1,275 | 1,281 | 705 |
| Georgia | 159 | 95 | 46 | 38 | 2,756 | 1,815 | 1,864 | 702 |
| Idaho | 44 | 10 | .. | .. | 426 | 258 | 280 | 161 |
| Illinois | 102 | 92 | 6 | 6 | 11,942 | 7,806 | 7,873 | 4,864 |
| Indiana | 92 | 63 | 1 | 1 | 4,081 | 3,136 | 3,257 | 1,815 |
| Iowa | 99 | 97 | .. | .. | 3,100 | 2,406 | 2,439 | 1,447 |
| Kansas | 105 | 70 | 19 | 18 | 2,117 | 1,512 | 1,525 | 985 |
| Kentucky | 120 | 115 | 4 | 3 | 2,702 | 1,829 | 1,893 | 838 |
| Louisiana | 64 | 41 | 17 | 17 | 2,200 | 1,446 | 1,531 | 709 |
| Maine | 16 | 15 | 1 | 1 | 887 | 722 | 729 | 392 |
| Maryland | 23 | 23 | .. | .. | 2,021 | 1,401 | 1,460 | 916 |
| Massachusetts | 14 | 18 | .. | .. | 7,526 | 5,180 | 5,256 | 3,094 |
| Michigan | 83 | 54 | .. | .. | 6,142 | 4,196 | 4,262 | 2,382 |
| Minnesota | 87 | 34 | 1 | 1 | 3,426 | 2,524 | 2,705 | 1,573 |
| Mississippi | 82 | 21 | 1 | 1 | 1,495 | 1,076 | 1,127 | 540 |
| Missouri | 114 | 78 | 11 | 9 | 5,248 | 3,251 | 3,269 | 2,167 |
| Montana | 56 | 17 | 25 | 21 | 520 | 363 | 416 | 240 |
| Nebraska | 93 | 50 | 16 | 16 | 1,705 | 1,086 | 1,161 | 718 |
| Nevada | 17 | 5 | 12 | 12 | 148 | 107 | 113 | 71 |
| New Hampshire | 10 | 10 | .. | .. | 616 | 511 | 526 | 296 |
| New Jersey | 21 | 21 | .. | .. | 5,438 | 3,604 | 3,784 | 2,522 |
| New Mexico | 31 | 15 | 16 | 16 | 419 | 254 | 288 | 169 |
| New York | 62 | 61 | 1 | 1 | 25,613 | 16,606 | 16,984 | 11,498 |
| North Carolina | 100 | 67 | 16 | 24 | 2,663 | 1,689 | 1,867 | 831 |
| North Dakota | 53 | 13 | 10 | 11 | 508 | 350 | 407 | 200 |
| Ohio | 88 | 87 | 2 | 2 | 9,117 | 6,271 | 6,400 | 3,728 |
| Oklahoma | 77 | 64 | 7 | 7 | 2,264 | 1,458 | 1,468 | 780 |
| Oregon | 36 | 24 | 2 | 2 | 1,246 | 774 | 820 | 523 |
| Pennsylvania | 67 | 60 | 6 | 6 | 13,205 | 9,077 | 9,348 | 6,021 |
| Rhode Island | 5 | 5 | 1 | 1 | 908 | 694 | 699 | 257 |
| South Carolina | 46 | 37 | 2 | 4 | 1,254 | 943 | 986 | 605 |
| South Dakota | 69 | 12 | 1 | 1 | 535 | 317 | 325 | 184 |
| Tennessee | 95 | 60 | 24 | 24 | 2,917 | 1,719 | 1,781 | 941 |
| Texas | 254 | 125 | 15 | 11 | 6,705 | 4,348 | 4,421 | 2,224 |
| Utah | 29 | 9 | 4 | 4 | 567 | 469 | 484 | 216 |
| Vermont | 14 | 10 | 3 | 3 | 501 | 374 | 384 | 207 |
| Virginia | 100 | 44 | 9 | 8 | 2,518 | 1,756 | 1,781 | 995 |
| Washington | 39 | 25 | 13 | 12 | 2,125 | 1,377 | 1,515 | 911 |
| West Virginia | 55 | 30 | 5 | 5 | 1,825 | 1,268 | 1,268 | 680 |
| Wisconsin | 71 | 32 | .. | .. | 3,436 | 2,470 | 2,543 | 1,402 |
| Wyoming | 24 | 11 | 11 | 11 | 266 | 170 | 171 | 114 |
| Alaska | .. | .. | .. | .. | 65 | 39 | 43 | 23 |
| Hawaii | 5 | 4 | 1 | 1 | 410 | 277 | 284 | 126 |
| Isthmian Canal Zone | .. | .. | .. | .. | 198 | 122 | 117 | 19 |
| P. I. (Provinces) | 56 | 25 | 34 | 31 | 3,107 | 1,054 | 1,130 | 44 |
| Puerto Rico | 7 | 7 | .. | .. | 443 | 359 | 364 | 65 |
| Foreign | .. | .. | .. | .. | 38 | .. | .. | 181 |
| | 3,120 | 2,054 | 386 | 366 | 173,879 | 119,210 | 116,366 | 68,193 |
| Commissioned medical officers | | | | | | | | 3,157 |
| | | | | | | | | 71,350 |

#### Annual Conference of Secretaries of Constituent State Medical Associations

The regular Annual Conference of Secretaries of Constituent State Medical Associations was held in Chicago Nov. 17 and 18, 1939. The secretaries of forty-three of the forty-nine constituent associations of the United States proper attended this

conference, and one of the territorial medical associations was represented by its executive secretary. The editors of the journals of constituent state medical associations are invited each year to participate in these conferences, and thirty-four members of this group attended the 1939 conference. The number of officers and members of official bodies of state and county medical societies in attendance at the annual state secretaries' conference is increasing each year. The members of this group participate in the conference discussions.

Topics for discussion before the conference are, for the most part, suggested by the secretaries and editors of the constituent associations, and thus opportunity is given through these annual conferences for frank and helpful consideration of matters of immediate and important interest to the secretaries, editors and other officers of component county medical societies and constituent state medical associations and of equal interest and importance to the members of the official and administrative personnel of the American Medical Association.

### Greater Interest and Efficiency in States and Counties

There can be no doubt in the mind of any one who has had opportunity for observation that there has been a most remarkable growth of interest in the affairs of component county medical societies and of constituent state medical associations within the last few years. This growing interest on the part of the profession is clearly shown by the growth of membership in county and state societies and in some independent organizations; by the greater attendance of physicians at meetings where scientific programs are presented or where subjects of a medicosocial order are discussed; by the more careful and extensive reading of medical periodicals; by the more constantly growing attention to the work and accomplishments of official bodies; by suggestions and criticism on the part of physicians, and, finally, by the ever growing stream of correspondence that pours, day after day, into the offices of county and state society officials and into the offices of every department of the American Medical Association. The fact that from 165 to 170 of the 174 members of this House of Delegates have been in attendance during the last several sessions bears eloquent testimony to the interest of the profession throughout the land in the work of this Association and to the earnest willingness and desire of these delegates to serve the cause of medicine efficiently and in a manner that will accord with the highest professional traditions.

The interest of the public in medicine and its practice and in the work of the official agencies of the profession has grown tremendously. That this is true is clearly shown by the constantly increasing demands made on the officers of medical organizations to provide speakers to address public audiences, by the constantly increasing size of such audiences, by the ever increasing discussion of medical subjects and medical affairs in the public press, by the willingness of the great broadcasting companies and of individual radio stations to make their facilities available for the public discussion of medical subjects, by the fact that teachers in the schools from the kindergarten to the university are studying and encouraging pupils to study hygiene and to apply the established principles of disease prevention, and by the further fact that tens of thousands of inquiries from individual laymen are received each year in the offices of the American Medical Association and thousands more in the offices of county and state societies.

A constantly increasing number of the component and constituent societies of this Association are striving to discharge as fully as possible the responsibilities that rest on them because of the growing interest of their own members and of the public in medical subjects and affairs. The tendency toward the employment of full time personnel is increasing. The official bodies and special committees of our societies are giving more and more of their time and effort for the promotion of the art and science of medicine and the betterment of the public health, which means that organized medicine in this country is earnestly trying to serve the public interest. The example set by our most active and efficient societies is having great effect in stimulating the more static organizations, and we may confidently look forward to the time in the not too distant future when there will be no static societies in any jurisdiction where genuine efficiency is possible of attainment.

### Amendment and Revision of Constitutions and By-Laws

A very considerable number of component county medical societies and constituent state medical associations have initiated intensive effort to secure amendment or revision of their organic laws. These efforts are to be commended, since it has become quite apparent that in many instances there is real need for constructive revision. However, it would seem highly desirable that there should be concerted effort toward the utmost possible uniformity in the constitutions and by-laws of all component and constituent societies. There are some major differences between the constitutions and by-laws of many component county medical societies and those of a number of constituent state medical associations. Conflicts between the provisions of the constitutions and by-laws of component societies and the provisions of these instruments of the constituent associations from which such societies receive their charters have been discovered. It is highly important, in the interest of efficient county, state and national organization, that all such conflicts should be removed. Wide diversities are noted in membership classifications that have been established by component and constituent societies. These are matters of importance not only from the standpoint of desirable efficiency in organization but also from the standpoint of purely legal considerations.

### Field Work

The President and the President-Elect of the Association have attended meetings of state associations in all parts of the country during the year, as have those who have served before them in each previous year. They have also attended a large number of special meetings and conferences. Members of official bodies of the Association and, in some instances, Fellows of the Association who hold no official positions have represented the Association before medical and public audiences. Members of the administrative personnel have traveled many thousands of miles and have appeared before professional and lay groups in nearly every state. These appearances have been made on the invitations of state, county or district societies or on invitations endorsed by these societies. These representatives of the Association have carried its message to elementary schools, colleges and universities, to the members of many professional and lay groups, and to general public audiences from the platform and over the radio. They have participated in important conferences with official representatives of medical societies and of civic organizations and with public officials including members of legislative bodies. It is a matter for regret that it is not possible to comply with all requests that the Association be officially represented at meetings of medical societies or provide speakers for lay audiences.

### Resolution for Submission to House of Delegates

The following resolution has been placed in the hands of the Secretary by Dr. A. A. Herold, delegate from the Louisiana State Medical Society, with notice of his intention to submit it to the House of Delegates at the New York session:

Whereas, The federal government saw fit, in an amendment to the Harrison Narcotic Act, to prohibit the importation and manufacture of heroin in this country; and

Whereas, Said prohibition has been in effect for a sufficiently long time to show that it does not prohibit the drug addicts from obtaining heroin by illegal means but does prohibit the medical profession from being able to utilize this valuable remedy in the treatment of diseases; and,

Whereas, As a result of said proscription, various proprietary medicinal houses have reaped a harvest from the sale of patented high priced narcotics, which they report to the medical profession as substitutes for heroin; therefore be it

*Resolved*, By the House of Delegates of the American Medical Association that, through our legislative committee, we petition Congress to rescind this amendment to the Harrison Narcotic Act, thereby permitting the medical profession to enjoy the benefits of this very useful opium derivative.

### In Appreciation

To all of those in official positions and among the general membership of the Association who have offered encouragement, counsel, criticism and aid of many kinds on many occasions, the Secretary extends an expression of his gratitude.

Respectfully submitted.

Olin West, Secretary.

## REPORT OF THE BOARD OF TRUSTEES

*To the Members of the House of Delegates of the American Medical Association:*

The Board of Trustees respectfully submits to the House of Delegates of the American Medical Association at its Ninety-First Annual Session the following report pertaining to the official activities of the Association as carried on through various councils, bureaus and departments. Reports of those councils which are standing committees of the House of Delegates will be submitted separately by their respective officers.

At regular and special meetings of the Board of Trustees that have been held during the period covered by this report an unusually large volume of business has been transacted, involving the consideration of a remarkably diversified list of items pertaining to the constantly growing work of the Association. Each year there are four stated meetings of the Board of Trustees, and meetings of the Executive Committee of the Board are held each month except in the month immediately succeeding that in which a stated meeting of the Board of Trustees is held. In 1939 it was necessary to have special meetings of the Board of Trustees as well as extra meetings of the Executive Committee in order that the business affairs of the Association might receive proper official attention. The Board of Trustees holds meetings each day during the first four days of each annual session. All meetings of the Board of Trustees are attended by the President, the President-Elect and the Treasurer of the Association and by the Speaker of the House of Delegates except in those instances in which it is not possible for one or more of these officers to attend. Meetings of the Board that have been held since the St. Louis session have been attended by the Vice President of the Association.

### Income and Expenditures

As a result of a detailed survey made by a leading organization of auditors, some changes have been made in the system of accounting heretofore used by the Association, which have contributed to simplification and clarification of some of the accounts on the Association's books and which will make it possible for the Board of Trustees to submit financial reports of each year's operation that will more clearly show the nature of financial transactions involved in conducting the business affairs of the Association. Because of these innovations it will not be possible to make simple comparisons between a few items pertaining to income and expenditures in the year 1939 and the same general items in the financial statement submitted to the House of Delegates covering the year 1938. Most of the changes made in accounting methods will enable the Accounting Department to distribute more accurately certain operating costs, largely costs involving overhead expense, among the various councils, bureaus and departments of the Association. All of these changes are in keeping with the best accounting practices.

Gross income from all sources for the year ended Dec. 31, 1939, amounted to $1,798,766.82.

Income received from Fellowship dues and subscriptions in 1939 was $751,882.02, which exceeded income from the same source in 1938 by the sum of $96,006.11. This gain was due almost entirely to the fact that the increase of $1 a year in the subscription price of THE JOURNAL went into effect on Jan. 1, 1939, and, to some small extent, to an increase in the number of Fellows.

Income from the sale of advertising space in 1939 amounted to $908,790.58, representing an increase of $33,423.15 over the preceding year.

Interest received on investments in 1939 amounted to $84,938.91, approximately $2,000 less than income from the same source in 1938. During the year several issues of bonds held by the Association matured or were called for payment. Other bonds will mature during the current year. Bonds held in the Association's portfolio with face value of $48,400 have defaulted in the payment of interest to the accumulated amount of $3,760.10. The tendency toward the maintenance of low interest rates has continued during the year covered by this report.

The cost of paper used in the publication of THE JOURNAL in 1939 was $229,362.75, compared to expenditures on the same account in 1938 of $252,254.14. This difference in expenditures for the two years is explained by the fact that more favorable prices for paper obtained in 1939. The cost of paper used in connection with publications other than THE JOURNAL are charged against those publications.

Expenditures incident to the operations of the various bureaus, councils and departments of the Association in 1939 were $484,052.06, as compared with $458,499.27 in the previous year. The larger expenditures in 1939 were due to the cost of installation and maintenance of the Association's exhibits at the New York World's Fair and the Golden Gate International Exposition in San Francisco and to increased activities on the part of all the councils, bureaus and departments of the Association.

Miscellaneous expenses including fees for legal services and investigations and the losses involved in the publication of the QUARTERLY CUMULATIVE INDEX MEDICUS, of special journals and of HYGEIA amounted to $205,885.02.

Expenditures for legal services and investigations were much larger than in 1938 because of the indictment brought against the Association by the Department of Justice and because certain suits were brought to trial and disposed of finally and favorably.

The net cost of publication of the QUARTERLY CUMULATIVE INDEX MEDICUS, of seven of the special journals published by the Association and of HYGEIA exceeded income received by the sum of $75,947.00, about one half of which amount was represented by the cost of publication of the QUARTERLY CUMULATIVE INDEX MEDICUS. Losses on HYGEIA, on the ARCHIVES OF SURGERY, on the ARCHIVES OF PATHOLOGY, on the ARCHIVES OF NEUROLOGY AND PSYCHIATRY and on the QUARTERLY CUMULATIVE INDEX MEDICUS were considerably smaller in 1939 than in 1938, while the losses sustained through the publication of the ARCHIVES OF INTERNAL MEDICINE, of the AMERICAN JOURNAL OF DISEASES OF CHILDREN, of the ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY and of the ARCHIVES OF OTOLARYNGOLOGY were larger than in the previous year. The ARCHIVES OF OPHTHALMOLOGY produced income larger than the cost of publication.

The Association's buildings and the equipment therein have been well maintained. During the year a new gathering machine was installed in the bindery, and a considerable amount of office furniture and equipment was purchased.

At the time of the preparation of this report 620 persons were employed by the Association. It is expected that increased expenditures for wages and salaries will be required during the current year.

The net gain as shown by the report of the Auditor for the year 1939 was $114,798.77, of which amount $84,938.91 was interest or investments.

The Report of the Treasurer and the Report of the Auditor are submitted as a part of the official report of the Board of Trustees.

### Summary

**Gross income from all sources for the year 1939 amounted to $1,798,766.82. Income received from Fellowship dues and subscriptions was $751,882.02, exceeding income from the same source in 1938 by the sum of $96,006.11. Income from the sale of advertising space amounted to $908,790.58, an increase over 1938 of $33,423.15. Interest received on investments amounted to $84,938.91, approximately $2,000 less than in 1938. Some bonds held by the Association matured or were called for payment during the year, and others will mature in 1940. Bonds with face value of $48,400 have defaulted in the payment of interest to the accumulated amount of $3,760.10. The cost of paper used in connection with the publication of The Journal was approximately $23,000 less than in the preceding year because of the more favorable prices which obtained in 1939. Expenditures on account of the various councils, bureaus and departments of the Association were $484,052.06, as compared with $458,499.27 in 1938. Miscellaneous expenses including fees for legal services and investigations and losses involved in sundry publications amounted to $205,885.02. The number of persons employed by the Association at the time of the preparation of this report was 620. Net gain for the year as shown by the Report of the Auditor was $114,798.77, of which amount $84,938.91 represented interest on investments.**

### The Journal of the American Medical Association

The influence of THE JOURNAL, already significant previous to 1939, was greatly enhanced during the year by its conspicuous leadership not only in scientific advancement but also in relation to social and economic problems. The ability to place promptly before the medical profession the activities of the House of Delegates and of the Board of Trustees was of vital importance in securing complete medical support for official policies. Especially important was the publication of a platform defining the point of view of the American Medical Association with regard to the extension of medical service. This met with prompt acceptance by constituent state and component county medical societies and is now being widely promulgated to the medical profession.

TABLE 1.—*Approximate Count of Fellows and Subscribers on The Journal Mailing List, by States, Jan. 1, 1940; Also Gain or Loss in Each State*

| State | Fellows | Subscribers | Totals | Gain | Loss |
|---|---|---|---|---|---|
| Alabama | 525 | 233 | 758 | .. | 4 |
| Arizona | 241 | 124 | 365 | 5 | .. |
| Arkansas | 407 | 195 | 602 | .. | 25 |
| California | 4,136 | 2,507 | 6,643 | .. | 71 |
| Colorado | 646 | 276 | 922 | .. | .. |
| Connecticut | 1,002 | 649 | 1,651 | 5 | .. |
| Delaware | 123 | 84 | 207 | 3 | .. |
| District of Columbia | 627 | 597 | 1,224 | 20 | .. |
| Florida | 749 | 414 | 1,163 | 109 | .. |
| Georgia | 656 | 401 | 1,057 | 22 | .. |
| Idaho | 141 | 96 | 237 | .. | 26 |
| Illinois | 4,467 | 2,772 | 7,239 | 21 | .. |
| Indiana | 1,057 | 606 | 1,663 | 73 | .. |
| Iowa | 1,309 | 457 | 1,766 | 63 | .. |
| Kansas | 846 | 260 | 1,106 | .. | 56 |
| Kentucky | 768 | 339 | 1,107 | 10 | .. |
| Louisiana | 685 | 372 | 1,057 | 39 | .. |
| Maine | 356 | 176 | 532 | .. | 7 |
| Maryland | 867 | 668 | 1,589 | 39 | .. |
| Massachusetts | 2,849 | 1,494 | 4,343 | .. | 189 |
| Michigan | 2,219 | 1,234 | 3,453 | .. | 1 |
| Minnesota | 1,389 | 656 | 2,045 | 21 | .. |
| Mississippi | 340 | 132 | 472 | 10 | .. |
| Missouri | 1,980 | 777 | 2,757 | 128 | .. |
| Montana | 193 | 108 | 301 | 1 | .. |
| Nebraska | 621 | 251 | 872 | .. | 17 |
| Nevada | 62 | 39 | 100 | 2 | .. |
| New Hampshire | 220 | 56 | 276 | 6 | .. |
| New Jersey | 2,309 | 1,549 | 3,858 | .. | 17 |
| New Mexico | 150 | 98 | 247 | 7 | .. |
| New York | 9,849 | 5,484 | 15,333 | .. | 122 |
| North Carolina | 775 | 504 | 1,279 | 8 | .. |
| North Dakota | 215 | 84 | 299 | 3 | .. |
| Ohio | 3,432 | 1,546 | 4,978 | .. | 42 |
| Oklahoma | 679 | 273 | 952 | .. | 44 |
| Oregon | 470 | 293 | 763 | .. | 2 |
| Pennsylvania | 5,512 | 2,475 | 7,987 | .. | 240 |
| Rhode Island | 326 | 191 | 517 | .. | 16 |
| South Carolina | 354 | 222 | 576 | .. | 12 |
| South Dakota | 181 | 107 | 288 | .. | 7 |
| Tennessee | 762 | 266 | 1,169 | .. | 30 |
| Texas | 1,912 | 863 | 2,775 | 26 | .. |
| Utah | 226 | 84 | 310 | .. | 14 |
| Vermont | 203 | 81 | 284 | .. | 5 |
| Virginia | 941 | 618 | 1,559 | .. | 15 |
| Washington | 817 | 286 | 1,103 | 47 | .. |
| West Virginia | 610 | 276 | 886 | .. | 19 |
| Wisconsin | 1,341 | 643 | 1,984 | .. | 16 |
| Wyoming | 105 | 50 | 155 | .. | 2 |
| U. S. Army | ... | 174 | 174 | 1 | .. |
| U. S. Navy | ... | 256 | 256 | 3 | .. |
| U. S. P. H. S. | ... | 87 | 87 | .. | 9 |
| Alaska | 19 | 27 | 46 | 2 | .. |
| Canada | 15 | 786 | 801 | .. | 23 |
| Cuba | 5 | 110 | 119 | 13 | .. |
| Hawaii | 102 | 90 | 192 | 13 | .. |
| Mexico | 8 | 112 | 120 | 26 | .. |
| Panama | 19 | 43 | 62 | 10 | .. |
| Philippine Islands | 40 | 215 | 255 | .. | 19 |
| Puerto Rico | 63 | 57 | 120 | .. | 4 |
| Virgin Islands | ... | 5 | 5 | .. | 2 |
| Foreign | 106 | 3,065 | 3,171 | 99 | .. |
| Advertisers and agents | ... | ..... | 506 | 6 | .. |
| Exchanges | ... | ..... | 223 | 3 | .. |
| Complimentaries | ... | ..... | 136 | 17 | .. |
| Total on mailing list | | | 99,849 | 869 | 1,054 |

Week after week the articles and editorials featured in THE JOURNAL appear in reprinted form in newspapers and other periodicals, a procedure which is constantly increasing, aided, of course, by the weekly dissemination of the AMERICAN MEDICAL ASSOCIATION NEWS.

The multiplication of councils and bureaus of the Association and the enhanced work, particularly of the Council on Medical Education and Hospitals, have led to the publication of a considerable number of special issues each year. This constitutes a difficult problem in the field of publication. Special issues now include numbers devoted to the state boards, medical education, institutions for the tuberculous, hospitals, industrial health

TABLE 2.—*Percentage of Physicians Receiving The Journal* *

| State | Number Receiving Journal | Physicians in A. M. A. Directory | Approximate Percentage Receiving the Journal |
|---|---|---|---|
| Alabama | 758 | 2,072 | 37 |
| Arizona | 365 | 562 | 65 |
| Arkansas | 602 | 1,650 | 36 |
| California | 6,643 | 11,578 | 57 |
| Colorado | 922 | 1,623 | 56 |
| Connecticut | 1,651 | 2,503 | 66 |
| Delaware | 207 | 326 | 63 |
| District of Columbia | 1,224 | 2,141 | 57 |
| Florida | 1,163 | 2,072 | 56 |
| Georgia | 1,057 | 2,750 | 38 |
| Idaho | 237 | 436 | 54 |
| Illinois | 7,239 | 11,942 | 61 |
| Indiana | 2,233 | 4,081 | 57 |
| Iowa | 1,726 | 3,109 | 56 |
| Kansas | 1,106 | 2,117 | 52 |
| Kentucky | 1,105 | 2,702 | 40 |
| Louisiana | 1,057 | 2,250 | 46 |
| Maine | 523 | 987 | 53 |
| Maryland | 1,589 | 2,821 | 55 |
| Massachusetts | 4,343 | 7,589 | 56 |
| Michigan | 3,453 | 6,142 | 56 |
| Minnesota | 2,025 | 3,438 | 59 |
| Mississippi | 442 | 1,495 | 29 |
| Missouri | 2,757 | 5,348 | 52 |
| Montana | 301 | 539 | 55 |
| Nebraska | 872 | 1,705 | 51 |
| Nevada | 100 | 168 | 60 |
| New Hampshire | 276 | 610 | 51 |
| New Jersey | 3,858 | 5,423 | 71 |
| New Mexico | 247 | 419 | 59 |
| New York | 15,208 | 25,613 | 60 |
| North Carolina | 1,279 | 2,083 | 61 |
| North Dakota | 299 | 508 | 59 |
| Ohio | 4,978 | 9,117 | 55 |
| Oklahoma | 952 | 2,304 | 40 |
| Oregon | 763 | 1,398 | 55 |
| Pennsylvania | 7,987 | 13,925 | 60 |
| Rhode Island | 517 | 988 | 55 |
| South Carolina | 576 | 1,354 | 43 |
| South Dakota | 288 | 535 | 54 |
| Tennessee | 1,169 | 2,917 | 40 |
| Texas | 2,775 | 6,795 | 41 |
| Utah | 310 | 567 | 55 |
| Vermont | 284 | 501 | 57 |
| Virginia | 1,557 | 2,918 | 53 |
| Washington | 1,103 | 2,123 | 57 |
| West Virginia | 886 | 1,823 | 49 |
| Wisconsin | 1,984 | 3,436 | 58 |
| Wyoming | 155 | 286 | 58 |

* This table gives the number of physicians (based on the Fifteenth Edition of the American Medical Directory) in the United States, the number receiving THE JOURNAL and the approximate percentage in each state. Copies to physicians in the United States Army, Navy and Public Health Service are not included.

and the annual session, and there are also feature issues containing special reports like those of the Annual Congress on Medical Education and Licensure, the Conference on Patents and the Annual Conference of Secretaries of Constituent State Medical Associations as well as the special reports on typhoid, diphtheria and Fourth of July injuries. No other medical publication in the world attempts any such comprehensive series of investigations and publications.

The present war in Europe has led to some difficulties in maintaining the foreign correspondence of THE JOURNAL, but by special arrangements material continues to be received from most of the world. During the year new foreign correspondents were added from Sweden, Denmark and Argentina.

Attention should be called again to the extraordinary service rendered by the department of Queries and Minor Notes. This feature of THE JOURNAL is maintained at considerable cost but is now generally recognized to be one of the most valuable services that can be rendered to the medical profession.

During 1939 THE JOURNAL published a Student Section each month excepting June, July and August. The Student Section has included original signed articles, comments and reviews of selected articles published in various journals in this country and in Europe, letters to the Editor and several pages each month of especially selected news items. In response to letters written to the deans of medical colleges in the United States, certain

students have been appointed in the various medical schools to contribute to the Student Section regularly local news items and other material.

The total circulation of THE JOURNAL as of Jan. 1, 1940, was 99,669. An appended table indicates the number of Fellows and subscribers on the mailing list of THE JOURNAL in each state and territory on Jan. 1, 1940, together with the number of Fellows and subscribers in other countries, the number of copies of THE JOURNAL sent to advertisers and subscription agents and the number sent as exchange or complimentary copies. A second appended table indicates the number and approximate percentage of physicians in each state who receive THE JOURNAL.

### Summary

**An increasing number of articles and editorials which have appeared in The Journal are now being reproduced in part, or are the subject of comment, in newspapers and other periodicals throughout the country. The American Medical Association News, issued each week, contains abstracts of material appearing in The Journal. Special issues of The Journal now include numbers devoted to medical education and the work of the Council on Medical Education and Hospitals, industrial health, institutions for the treatment of tuberculosis, the annual session of the American Medical Association and hospital registration and administration. Special reports pertaining to the Annual Congress on Medical Education and Licensure, the Annual Conference of Secretaries of Constituent State Medical Associations and typhoid, diphtheria and Fourth of July injuries are featured in other issues of The Journal.**

**The department of Queries and Minor Notes continues to be an important feature of The Journal. A Student Section was published each month except during June, July and August and has attracted much favorable attention. Three additional foreign correspondents were added to The Journal staff during the past year. The total circulation of The Journal as of Jan. 1, 1940, was 99,669.**

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### Work in Press Relations

A continued acceptance by newspapers and other lay publications of the American Medical Association as an unbiased and dependable source of information on the current medical scene is evidenced by the wide acceptance and use of the AMERICAN MEDICAL ASSOCIATION NEWS, which was inaugurated in November 1938. This publication contains abstracts of material appearing in the various publications of the Association and is published each Thursday. Its mailing list includes 347 daily newspapers, fifty-eight news services, radio stations and miscellaneous news organizations, thirty-two health departments, forty-three health and tuberculosis associations, sixty-nine county and local medical societies, fifty-four constituent state and territorial medical associations, eighty-one national medical organizations, fifty-seven pharmaceutic companies and associations, forty-three industrial organizations and fifteen educational institutions. The names of the publications and organizations receiving the AMERICAN MEDICAL ASSOCIATION NEWS have been placed on the mailing list on request. There is no charge for the publication. Some conception of the acceptance of the AMERICAN MEDICAL ASSOCIATION NEWS by the American press is indicated by the fact that each week from one to four stories based on its contents are sent out from Chicago by the Associated Press, the United Press, the International News Service and the Transradio Press to the 1,088 daily newspapers and a large number of radio stations in the United States. Material appearing in the AMERICAN MEDICAL ASSOCIATION NEWS is carefully correlated with the weekly radio broadcast "Medicine in the News," prepared by the Bureau of Health Education.

During the year approximately 1,400 inquiries involving all phases of medicine were received from newspapers. These ranged from interviews by reporters at the headquarters office to telegrams and long distance telephone calls. A file of medical stories appearing in newspapers is kept in this department for reference purposes in answering inquiries.

Other activities of this department include the preparation of special articles furnished on request and without charge to such publications as industrial house organs, and of material for the Medical News page appearing in HYGEIA each month, assistance to state and county medical societies in their press relations programs, and the handling of press arrangements for the annual sessions of the American Medical Association as well as for special meetings sponsored by the Association such as the Annual Congress on Medical Education and Licensure and the Annual Congress on Industrial Health.

The department has prepared many of the articles for and has otherwise aided in the preparation of fifteen medical supplements sponsored during the past year by constituent state or component county medical societies in local newspapers.

The press arrangements for the annual sessions of the American Medical Association, under the supervision of the Editor of THE JOURNAL, have become so efficient that they are used as models by other organizations. As an example of the volume of newspaper coverage of the annual sessions, a total of 316,186 words were either published in the St. Louis daily newspapers or telegraphed by wire services or special staff writers to other papers in the country during the five days of the St. Louis session in May 1939.

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### Special Journals

From the scientific, editorial and mechanical points of view the quality of the eight special journals published by the American Medical Association is equal, if not superior, to that of any similar periodicals published in the world. The popularity of these journals as sources of publication of high grade scientific material continues. The number of pages in all but two of the journals in 1939 exceeded the number published in 1938. Although the number of subscribers has increased, the loss on the publication of the special journals in 1939 was slightly in excess of the loss the preceding year. An effort was made to reduce the loss by discontinuing the furnishing of complimentary reprints from these journals in accordance with the action taken by the Board of Trustees. This policy was applicable on articles the proofs of which were sent out after August 1. However, many of the articles the proofs of which went out prior to August 1 were not published until after that date, and the policy was therefore effective only for a few months in 1939. Only one of the periodicals, the ARCHIVES OF OPHTHALMOLOGY, was produced without loss. Specialists in these fields should lend their wholehearted support to these periodicals, which are published for the promotion of scientific knowledge in special fields and without any idea of commercial gain.

The reviews of the literature published in the ARCHIVES OF INTERNAL MEDICINE continue to attract much attention and probably are responsible for at least a part of the gain in the subscription list of that periodical, which was approximately 400 in 1939.

Symposiums on industrial dermatoses read at the 1938 meeting of the American Medical Association and of the American Dermatological Association were published in the ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY and have been reprinted in pamphlet form in response to a demand on the part of dermatologists.

From time to time requests have been received for cumulated indexes of some of the special journals. To ascertain what the demand for these cumulated indexes would be, notices were published in several issues of four of the journals to the effect that ten or twenty year cumulated indexes would be published if the demand was sufficient to justify it. The interest exhibited thus far, however, has been too small to warrant the Association in undertaking the publication of any of these indexes.

Several changes were made in the membership of the editorial boards in 1939. Dr. Charles C. Dennie succeeded Dr. Martin F. Engman on the editorial board of the ARCHIVES OF DERMATOLOGY AND SYPHILOLOGY; Dr. Horton R. Casparis succeeded Dr. L. R. DeBuys on the editorial board of the AMERICAN JOURNAL OF DISEASES OF CHILDREN; Dr. James A. Babbitt was added to the editorial board of the ARCHIVES OF OTOLARYNGOLOGY, and Drs. Arthur W. Allen, Alfred Blalock, Lester R. Dragstedt and Walter E. Dandy were added to the editorial

board of the ARCHIVES OF SURGERY. In April 1939 death claimed one of the esteemed members of the editorial board of the ARCHIVES OF PATHOLOGY, Dr. Alfred Stengel.

Dr. Waltman Walters was elected chairman of the editorial board of the ARCHIVES OF SURGERY early in the year, owing to the illness of Dr. Dean Lewis, Editor in Chief of the publication since its establishment in 1920. Dr. Walters and his co-workers have worked assiduously to maintain the high standard of the periodical, set by Dr. Lewis, and to initiate improvements which will appeal to its readers.

Arrangements have been made for an exhibit of the special journals in the Scientific Exhibit at the New York session of the Association.

The cost of production of all the special journals in 1939 exceeded income by the sum of $29,125.49, slightly more than the loss incurred in the preceding year.

It is gratifying to the Board of Trustees to report to the House of Delegates that each of the eight special journals published by the Association showed increases in circulation in 1939, varying from thirty to [illegible] OF OTOLARYNGOLOGY to 391 for the ARCHIVES OF [illegible] MEDICINE.

**Summa[illegible]**

**The number of pages in each of the special journals, with two exceptions, was greater in 1939 than in the preceding year. The circulation of all these journals in 1939 was greater than in 1938. The cost of production of the special journals as a whole was slightly larger in 1939 than in the previous year, the total loss amounting to $29,125.49. Only one of this group of journals was published without loss. The policy of providing complimentary reprints of articles appearing in the special journals has been discontinued. Reviews of literature published in the Archives of Internal Medicine have attracted much favorable attention. In compliance with persistent demand, symposiums on industrial dermatoses published in the Archives of Dermatology and Syphilology have been reprinted in pamphlet form. Requests having been received for cumulative indexes for some of the special journals, an effort to ascertain what the demand would be failed to show that it would justify the publication of such indexes.**

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## Library

The functions of the Library of the American Medical Association include the maintenance of the package library service and of the periodical lending service, the indexing of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and of some of the other periodicals and books published by the Association, the answering of questions on medical bibliographic subjects, the maintenance of an employees' library and the provision of reference material to workers in the headquarters offices.

During 1939, 2,993 package libraries were distributed, going to every state, the District of Columbia and Canada. The subjects most frequently requested concerned sulfanilamide, tuberculosis, arthritis, pneumonia, undulant fever, anesthesia, diabetes, cancer and the vitamins. Notwithstanding the fact that the United States government maintains innumerable libraries and similar services, material from the package library service of the American Medical Association was supplied on request to ninety-one government hospitals and agencies. Letters coming from physicians who have benefited from this service indicate a vast appreciation. This service is supplied at a fee far below its actual cost to the Association and is intended primarily as a means of advancing medical science and of giving to practitioners who are far removed from available libraries a good reference service.

Periodicals were sent on loan by the Library to many physicians. The number sent during 1939 was 12,714, the requests coming again from every state in the Union, the District of Columbia and Canada. Bibliographic aid was given in response to 6,000 requests received by letter and telephone. During the year, 1,545 visitors to the Library personally requested service.

The Association finds it impossible to maintain a permanent periodical or book library of large proportions. Therefore, periodicals no longer called for because of age are distributed to libraries that maintain permanent collections. During the year periodicals for 1926 and 1927 were discarded from the files of the Library and were distributed to sixty-four other medical libraries, of which thirteen were libraries of county medical societies.

The employees' library makes books available to employees of the Association, who pay an annual fee of 50 cents to aid this service. The circulation of books during the year was 4,973, and the employee subscribers numbered 114. The magazine circulation totaled 1,258 for the last six months of 1939. Twenty-two popular magazines are now circulated through the employees' library.

The circulation of the QUARTERLY CUMULATIVE INDEX MEDICUS in 1939 increased by 181 subscribers. The income from subscriptions and sales for the year was $35,428.34, an increase of about $5,460 over 1938. The production of a greater number of copies, however, brought the printing costs to a new high figure of $42,160.02. The net loss on the publication of the INDEX for 1939 was $39,151.66, the lowest figure for many years.

One hundred and eighteen periodicals were added to the number of journals indexed in the QUARTERLY CUMULATIVE INDEX MEDICUS and twenty-seven periodicals were dropped from the list, making a net gain of ninety-one in the number of periodicals indexed in 1939.

It is too early, perhaps, to estimate what effect the war will have on periodicals published in foreign countries. It is obvious at this time, however, that the size of many of the foreign periodicals is being cut considerably. The wars in Europe have not seriously interfered with the transmission of foreign periodicals except those published in France.

### Summary

**Through the package library service and the periodical lending service 2,993 library packages were distributed and copies of 12,714 periodicals were lent in 1939. Bibliographic aid was given in response to 6,000 requests, and the facilities of the Library were utilized by 1,545 visitors during the year. The circulation of books and magazines during the year among the Association's employees through the employees' library totaled more than 6,000.**

**The Quarterly Cumulative Index Medicus, prepared for publication in the Association's Library under the supervision of the Editorial Department, showed a slightly increased circulation in 1939. One hundred and eighteen periodicals were added to the number of journals indexed, while twenty-seven were dropped. The cost of production of the Quarterly Cumulative Index Medicus over income received was $39,151.66, as compared with $43,034.71 in 1938.**

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## Hygeia

The continuous improvement in HYGEIA, particularly in illustration and display as well as in the nature of the material published, has attracted wide attention among publishers and educators. HYGEIA continues to be the most widely quoted and reprinted publication in the field of health. Special attention should be called to a new series of articles devoted to the nine leading causes of death and to the many articles which have been regularly reprinted in the *Reader's Digest* and have had, thereby, a tremendous additional circulation. One such article, entitled "It Was Only a Scratch," was so widely reprinted after first publication in HYGEIA that its total circulation has by this time reached more than ten million copies.

The restrictions on acceptable advertising necessary in order to make HYGEIA accord completely with the policies of the American Medical Association make it exceedingly difficult to secure for this periodical enough general advertising to make it fully self supporting. Were it to have the freedom of advertising copy available to most of the popular publications, HYGEIA could be made to yield a large profit to the Association. Fortunately, however, there seems to be a tendency toward an increase in advertising matter, particularly now that the government has begun to place more definite restrictions on gen-

eral advertising in accordance with the Wheeler-Lea Amendment and the work of the Federal Trade Commission. There is every reason to believe that the publication of HYGEIA will be greatly stabilized within the next few years. Even at present the loss on the publication is not significant in relation to the vast amount of good that it accomplishes and the service that it renders.

The net paid circulation of HYGEIA for the year 1939 showed an increase of 7,588. Advertising income was approximately $2,000 less than in the preceding year. The total income from subscriptions and the sale of advertising space was less by the sum of $7,669.85 than the costs of publication.

A total of 15,949 physicians were subscribers to HYGEIA in 1939, while the total circulation of the magazine was in excess of 110,000.

**Summary**

**There has been continuous improvement in Hygeia with respect to the nature of material published as well as to the mechanical features of the magazine, and it is perhaps the most widely quoted publication of its kind. A new series of articles is devoted to nine leading causes of death. Many of the articles published in Hygeia have been regularly reprinted in the Reader's Digest, and one article was so widely reprinted that its total circulation has approximated ten million copies.**

**Income from the sale of advertising space in Hygeia was approximately $2,000 less than in 1938. Net paid circulation in 1939 showed an increase of 7,588. The total income was less than the cost of production by the sum of $7,669.85.**

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### Standard Classified Nomenclature of Disease and National Conference on Medical Nomenclature

The revision of the Standard Classified Nomenclature of Disease has been rapidly pushed forward with the advice and help of a large number of consultants. It is anticipated that the new edition will be completed in 1940.

A National Conference on Medical Nomenclature was held at the headquarters office of the American Medical Association on March 1, 1940, attended by representatives of special societies, hospital organizations, government services and other interested groups. It was clearly brought out at the conference that advances in medicine necessitate reexamination of the methods of classifying disease at relatively frequent intervals. The conference, therefore, recommended that it or a similar body meet at periods of approximately five years and that revisions of the Standard Nomenclature of Disease occur at similar intervals. It was suggested that in the interim an editorial advisory board be appointed to concern itself with problems which may require more constant supervision. The conference approved the preparation of a standard nomenclature of operations.

Many problems of disease classification were discussed at the conference and it was brought out that the formal classification of disease involves educational factors, the facilitation of clinical research, the organization of hospital record libraries, comparative morbidity statistics and morbidity reports and the relation of morbidity to the International List of Causes of Death. It was clearly demonstrated by several papers given at the conference that the Standard Classified Nomenclature of Disease lends itself to many aspects of clinical research and that it may also serve as the basis for the preparation of large scale morbidity reports by adaptation to punch cards and tabulating methods.

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### Book Publication

Significant among the book publications of the American Medical Association in 1939 were the first editions of the books Accepted Foods, The Pharmacopeia and the Physician, The Vitamins and a series of Selected Questions and Answers taken from the Queries and Minor Notes Department of THE JOURNAL. The advance orders and the prompt response of the profession to these books indicate that the Association meets a demand in making available such contributions. It is not, however, the plan of the Association to enter the field of book publication except as far as concerns reprinting of material from the columns of the periodicals which it publishes.

### American Medical Directory

The Sixteenth Edition of the American Medical Directory is now in process of preparation for publication, and it is expected that this new edition will come off the press about the middle of the current year.

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### Cooperative Medical Advertising Bureau

The Cooperative Medical Advertising Bureau is operated for the benefit of official organs of constituent state medical associations. Thirty-four state medical journals were represented by the Bureau in 1939. The *New York State Journal of Medicine* became a cooperative member of the Bureau in 1939 but has recently discontinued its membership. The *North Carolina Medical Journal*, an entirely new publication, made its appearance in January 1940 and is included in the list of state journals served by this Bureau.

The total amount of business secured through the Cooperative Medical Advertising Bureau in 1939 was $202,868.23. Commissions earned amounted to $40,459.49, of which sum $22,750 was distributed among the cooperating state journals at the end of the year. The amount of commissions so distributed to the cooperating journals in 1938 was $17,500. The operating costs of this Bureau in 1939 were $15,572.49.

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### Mailing and Order Department

The Mailing Department in 1939 handled 1,608,747 pieces of first and third class mail. This does not include the mailing of publications of the Association to subscribers.

In the Order Department, 72,265 separate orders were handled during the year covered by this report, involving the distribution of more than 520,000 units and the handling of more than 3½ tons of mail.

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### Indictment of the Association and Others at the Instigation of the Department of Justice

As has been previously reported to the House of Delegates by the Board of Trustees, an indictment against the American Medical Association and others was secured by the United States Department of Justice at the hands of a special grand jury in the District of Columbia.

On Dec. 20, 1938, a presentment and indictment in the name of the government of the United States against the American Medical Association and others was filed in the United States District Court for the District of Columbia. On Feb. 28, 1939, general and special demurrers of the defendants to this indictment were filed in the same court. On July 26, 1939, by the order of Justice Proctor, of the United States District Court for the District of Columbia, defendants' demurrers to the indictment were sustained and the indictment dismissed. On July 31, 1939, the government, through its Department of Justice, appealed to the United States Court of Appeals for the District of Columbia and that court issued a citation to the defendants. On Sept. 9, 1939, a certified copy of the record for the appellant was filed in the United States Court of Appeals for the District of Columbia. About Sept. 15, 1939, the government, by filing its petition in the Supreme Court of the United States praying for a writ of certiorari directed to the Court of Appeals, requested the Supreme Court of the United States to remove the case from the Court of Appeals to the Supreme Court before the case was argued or submitted to the Court of Appeals. On Oct. 23, 1939, the United States Supreme Court denied the petition of the government for the writ of certiorari. On Dec. 14, 1939, the printed brief and argument for the defendants was filed in the United States Court of Appeals for the District of Columbia. On Jan. 2, 1940, the government submitted a motion for a hearing before all of the justices of the Court of Appeals, which was denied. On Jan. 12, 1940, argument was presented by counsel for the government and by counsel for the American Medical Association and others named in the indictment.

On March 4, 1940, the United States Court of Appeals for the District of Columbia rendered a decision reversing the decision of the District Court. The decision of the appellate court was printed in full in THE JOURNAL March 16, 1940.

In accordance with instructions given by the House of Delegates to the Board of Trustees, it is the purpose of the Board to exhaust all possible effort to defend the American Medical Association against the indictment and to secure complete acquittal under the charges accusing the American Medical Association and others of conspiracy and of violation of the federal antitrust laws.

### Conferences with Official Representatives of Other Organizations

During the year, the Board of Trustees has extended invitations to official representatives of organized medical and hospital groups to attend conferences for the purpose of discussing matters of important mutual interest. All of these invitations, with one exception because it was not possible to find a convenient time for the conference, were cordially accepted.

Conferences have been held with representatives of the three national hospital associations, the American College of Physicians, the American College of Surgeons, the American Society of Clinical Pathologists and the American Dental Association, at some of which representatives of the Council on Medical Education and Hospitals have been in attendance. The Board of Trustees is grateful to those who have participated in the conferences, and its members believe that much good has resulted from frank discussion of present day problems, with which all of the organizations represented are concerned. It has been made possible to initiate certain cooperative undertakings which, if successfully prosecuted, should result in the avoidance of duplication of effort, in a fuller understanding of the objects that the medical profession through its various agencies is striving to attain and in the development of further plans which, if successfully prosecuted, will promote the art and science of medicine and the betterment of public health.

### Tax Ruling of Bureau of Internal Revenue

As the Board of Trustees has previously reported to the House of Delegates, the Bureau of Internal Revenue of the United States Government on April 28, 1938, issued a ruling declaring the American Medical Association liable for the payment of Social Security taxes. In accordance with instructions received from the House of Delegates, the Board of Trustees, through counsel, appealed for a reversal of this ruling and a communication dated Nov. 4, 1939, was received from the Commissioner of Internal Revenue on Nov. 6, 1939, stating that the ruling whereby the Association had been made liable for the payment of taxes under the sections of the statutes pertaining to unemployment compensation and old age benefits had been revoked. Thus the status of the American Medical Association as a scientific and educational organization rather than as a business league has been reestablished.

Payments for taxes made to the state of Illinois have been returned to the Association, but at the time of the preparation of this report sums paid directly to the federal government have not been repaid.

A bill providing that scientific and educational organizations heretofore exempt under existing statutes shall be required to pay Social Security taxes is now pending in Congress.

### Committee on Air Conditioning

The Committee on Air Conditioning has completed the compilation of an extensive bibliography on air conditioning, and the Board of Trustees is endeavoring to make desirable arrangements for the publication of this bibliography.

### Committee to Study Problems of Motor Vehicle Accidents

The report of the Committee to Study Problems of Motor Vehicle Accidents submitted to the House of Delegates at the St. Louis session has attracted widespread attention, and hundreds of printed copies of this report have been distributed.

### Advisory Committee on Advertising of Cosmetics and Soaps

The Advisory Committee on Advertising of Cosmetics and Soaps continued to consider those cosmetic preparations which were submitted to THE JOURNAL and HYGEIA for advertising. The purpose of this Committee is to protect the readers of these publications from extravagant claims, to be of service to those members of the medical profession who make inquiry and to place the consideration of cosmetics on a higher plane. This was particularly necessary when the Committee was formed, before the advent of the Food, Drug and Cosmetic Act and the Wheeler-Lea Amendment. Whether or not it will be necessary to continue this Committee and maintain this service in view of the new laws is a matter which will come before the Board of Trustees.

A most welcome change in the attitude of cosmetic manufacturers in advertising has been evinced within the last year. For the first time cosmetics have been brought under some fashion of control with the advent of the new laws. Those concerns whose products had previously been passed on by the Advisory Committee on Advertising of Cosmetics and Soaps found little difficulty in meeting the new federal regulations. The Committee has gone further in its considerations than the federal regulations because it has demanded scientific evidence before giving recognition to unusual claims. Among the rulings adopted by the Advisory Committee in 1939 were the following:

The Committee cannot countenance the recognition of any preparation to be used for the self-medication of the eyes.

The quantitative formulas of all products now being advertised in publications of the American Medical Association and those now under consideration for acceptance must be filed with the Committee on or before Jan. 1, 1940. All future submissions must be accompanied by a quantitative statement of ingredients.

In the event that any product is accepted for advertising, no change may be made in the formula without notification and consent of the Committee, so far as the accepted status is concerned.

All products which contain colors or dyes must be accompanied by a statement that said colors or dyes have been certified by the Department of Agriculture for use in cosmetics.

No claims for cosmetic products may be made to indicate that they nourish the skin, hair, scalp or lips or that they grow hair. No product or lotion may be said to go "deep down" into the pores. No cosmetic product may "restore" anything that nature possesses; it may supply or furnish. Lipsticks may not be termed "indelible," since this implies permanence.

It is gratifying to report that the majority of those who were asked to submit quantitative formulas responded favorably. The Committee has maintained the policy of not publishing articles over its name, but it has had the satisfaction of receiving the cooperation of many firms in revising their literature.

On Jan. 1, 1940, Dr. Paul C. Barton, Director of the Bureau of Investigation, was appointed Secretary of this Committee.

### Resolution from Section on Ophthalmology

A resolution submitted to the House of Delegates at the St. Louis session by the delegate of the Section on Ophthalmology providing that the Board of Trustees be requested to appoint a special committee to study all phases of the problem of prevention of blindness and that a report of the activities of such committee be made at the 1940 session was approved by the House of Delegates and referred to the Board of Trustees.

This resolution received official consideration at a regular meeting of the Board of Trustees, and it was decided to refer the resolution to the Section on Ophthalmology, in which it originated, because of its inclusive nature and because the members of the Board of Trustees thought it was possible that the section might wish to amend the resolution so as to make it more specific in nature and to designate more clearly the duties to be assigned to the proposed committee. The resolution has been so referred and will, in all probability, be resubmitted to the House of Delegates in some form at the New York session.

### Division of Drugs, Foods and Physical Therapy

The Council on Pharmacy and Chemistry, the Council on Foods and the Council on Physical Therapy compose the Division of Drugs, Foods and Physical Therapy, established largely for administrative purposes. Through this coordination of the

work of the three councils and because of the whole-hearted, intensive cooperation on the part of their personnel, duplication of work is largely avoided and a higher degree of efficiency is attained.

## Council on Pharmacy and Chemistry

The Council on Pharmacy and Chemistry completed its thirty-fifth year of service on Feb. 11, 1940. Two of the original members of the Council, Dr. R. A. Hatcher of Cornell University Medical College and Dr. Torald Sollmann of Western Reserve University School of Medicine, have served continuously and with great distinction since the creation of the Council.

In the beginning, this Council was most largely concerned with problems created through practices of fraud and deception in the exploitation of secret, proprietary preparations. In the thirty-five years during which the Council has persistently maintained its efforts to bring about and maintain rationalism in the field of therapeutics, the nature of many of the problems confronting the Council has materially changed. There still exists a tendency on the part of some manufacturers of proprietary products to make overenthusiastic claims for their products, to promote complex mixtures of well known drugs under fanciful names, to exploit unessential modifications of established drugs and to promote the sale and use of products intended for therapeutic purposes before scientific evidence of therapeutic value has been established.

The members of the Council serve without any remuneration but freely give a large amount of their time and effort to the council's work.

Conclusions of the Council with respect to products that have been submitted to it for official consideration are published whether or not such preparations are accepted for inclusion in the Council's official lists of accepted products. The Council operates under a set of rules, printed copies of which are available on request. While the rules now in effect are, in some respects, essentially the same as those adopted thirty-five years ago, the interpretation of these rules has been amplified and clarified to meet new conditions as they have arisen. A three-fourths majority vote of the Council is required for the adoption of any report pertaining to the acceptance of a submitted product for inclusion in New and Nonofficial Remedies, which constitutes the Council's list of accepted products.

No fee or payment of any sort is required or accepted from any one who submits products for official consideration by the Council.

### WORK OF THE COUNCIL IN RELATION TO THE NEW FOOD, DRUG AND COSMETIC ACT

The Council on Pharmacy and Chemistry has for many years cooperated to the fullest possible extent with the Food and Drug Administration of the United States Department of Agriculture and with other agencies of the federal government. Under the new federal Food, Drug and Cosmetic Act, therapeutic products sold for prescription purposes, to be exempt from the provision requiring labels of drugs to bear adequate directions for use, must carry on the package label the statement "To be used only by or on the prescription of" a physician. In the case of drugs to be sold in interstate commerce that are not so labeled, an alternate method of labeling must be used whereby the names of diseases for the treatment of which the individual product is proposed must appear, and thereby such products are brought within the classification of "over-the-counter" sales. It is believed that the public will soon realize that a physician who prescribes products the labels of which do not bear the statement "To be used only by or on the prescription of" a physician is aiding in the promotion of undesirable products.

The agencies of the federal government charged with the administration of the federal Food, Drug and Cosmetic Act will deal properly and effectively with mislabeled products. However, it is important for physicians to remember that it is not within the purview of administration agencies to determine whether or not a drug is a worth while addition to materia medica. This is one reason why it is more important than ever that the medical profession should give whole-hearted support to the work of the three councils which compose the Division of Foods, Drugs and Physical Therapy of the American Medical Association, because, after all, expert medical opinion must originate within the medical profession.

It seems to be evident that those manufacturers of therapeutic products who have cooperated with the Council on Pharmacy and Chemistry and have followed its leadership have found it easier to comply with the provisions of the Food, Drug and Cosmetic Act and of the Wheeler-Lea Amendment than have those who have not offered such compliance.

### PUBLICATIONS OF THE COUNCIL

New and Nonofficial Remedies: This publication constitutes the official list of the Council of products submitted and approved for inclusion. In the last edition some new products have been added, while some which were formerly listed have been omitted either because of conflict with the rules of the Council or because they have been removed from the market. While New and Nonofficial Remedies is intended chiefly for the physician, it is also of value to others who are concerned with medicinal preparations including manufacturers of pharmaceutic products, pharmacologists, governmental institutions, teachers and students. More than 5,000 copies were sold in 1939, and paper bound copies were distributed among the members of one class of each recognized medical school.

Epitome of the U. S. Pharmacopoeia and National Formulary: Because of the issuance of a second supplement to the U. S. Pharmacopoeia XI, which became official Jan. 1, 1940, it was necessary that the Epitome be revised and, as this report is being prepared, arrangements for such revision are under way. It will be necessary to make a second revision, less important in character, when a new edition of the National Formulary, to be made available about Jan. 1, 1941, is published. Approximately 3,500 copies of the Epitome were sold in 1939.

Useful Drugs: The demand for this important publication of the Council has continued to such an extent and there have been such remarkable advances in materia medica that it has become necessary to make a complete revision and it is expected that this will have been effected early during the summer of the current year. The number of copies of Useful Drugs distributed in 1939 was 7,360.

Glandular Physiology and Therapy: Because of rapid advances being made in the field of hormone therapy, no revision of the book issued in 1936 has been attempted, but a series of articles pertaining to glandular physiology and therapy will be published under the auspices of the Council during the year 1940, and these articles probably will serve as the basis for an entirely new book.

A. M. A. Interns' Manual: The response to the issuance of this publication, prepared through the cooperation of the Council on Pharmacy and Chemistry and other councils and departments of the Association, has been very gratifying. A revised edition will be prepared for publication during the current year. The number of copies sold in 1939 was 2,250.

### REPORTS OF THE COUNCIL

The Council has continued its policy of issuing timely reports dealing with therapeutic products in addition to the regularly published articles of acceptance. Sulfanilamide has attracted more attention within the last few years than any other therapeutic product. The rapid advancement of knowledge, developed after scientific investigations, of the nature and action of this drug is reflected in the fact that within the space of three years the Council has found it necessary to issue three revisions of its original statement pertaining to the actions, uses and dosage of sulfanilamide. It is felt that the work of the Council in this connection has been extremely useful and important and has served to impress the members of the profession throughout the country with the need for exercising all due care in the use of this particular drug. The Food and Drug Administration of the Department of Agriculture of the federal government has included sulfanilamide in its classification of drugs in interstate commerce that may not be lawfully sold over the counter.

Early in 1939 the Council issued a preliminary report on sulfapyridine based on information compiled by the members of the Council and augmented by 100 investigators whose cooperation had been solicited through the columns of THE JOURNAL. The issuance of this report was followed by an announcement of the acceptance of sulfapyridine by the Food and Drugs division of the federal government. Nine months thereafter it became necessary to revise the original statement in order that it might

more fully present the knowledge regarding the actions, uses and dosage of sulfapyridine that had been gained within that brief period.

These two examples clearly indicate the constantly increasing amount of work with which the Council must be concerned and reflect the intensive work being done by medical investigators in this country.

Among other reports published by the Council in 1939 were those dealing with hormone therapy. Articles on chorionic gonadotropin, testosterone and testosterone compounds were published during the last year, and a report on stilbestrol, quite conservative in nature, has been widely quoted in medical publications. In various other reports issued by the Council there has been discussion of the dangers of intra-urethral injection of local anesthetics, the use of manganese compounds in the treatment of dermatologic disorders, certain types of mercurial suppositories, bismuth preparations and other products that have been offered for use by the profession.

At the request of the Board of Trustees, the Council undertook a comprehensive study of the promiscuous use of barbital and barbital derivatives, and the first report based on this study was published in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION for April 8, 1939. At the close of the year a second report was being prepared.

In cooperation with the Council on Foods, a statement on the status of vitamins was issued and attracted such widespread attention that it became necessary to make it available in pamphlet form. The continuing interest in the vitamins requires further study on the part of both the Council on Pharmacy and Chemistry and the Council on Foods and also makes it necessary to continue attempts to counteract unwarranted capitalization of vitamin preparations by purely commercial interests.

It would require much more space than is available or than can be used in a report of this kind to give a full account of the work of the Council on Pharmacy and Chemistry or even to mention all the individual products or the nature of all the problems that have demanded and received consideration. That there is a constantly growing interest in the Council's work is clearly shown by the increasing correspondence and by the large number of conferences in which members of the Council's staff are called on to participate day after day.

### Summary

**The Council on Pharmacy and Chemistry completed its thirty-fifth year of service on Feb. 11, 1940. Dr. R. A. Hatcher and Dr. Torald Sollmann have served continuously as members of the Council since its creation in 1905. The members of the Council give a large amount of their time and effort to the Council's work without any remuneration. The nature of many of the problems confronting the Council has materially changed. The Council operates under rules which are available to any who are concerned. A three-fourths majority vote of the Council is required for the adoption of any report pertaining to the acceptance of a submitted product. No fee or payment of any kind is required or accepted from any one in connection with the submission or consideration of therapeutic products.**

**The Council has continued to cooperate with the Food and Drug Administration and with other agencies of the federal government. Under certain provisions of the new federal Food, Drug and Cosmetic Act, therapeutic products sold for prescription purposes must bear on their labels the statement "To be used only by or on the prescription of" a physician. The proper agencies of the federal government will no doubt deal effectively with mislabeled products, but it is not within the purview of such agencies to determine whether or not a drug is a worth while addition to materia medica and it is therefore highly important that the profession give whole-hearted support to the work of the Council. Apparently manufacturers of therapeutic products who have cooperated with and followed the leadership of the Council on Pharmacy and Chemistry have found it easier to comply with the provisions of the Food, Drug and Cosmetic Act than have those who have not so cooperated.**

**Satisfactory distribution of the publications of the Council has continued. Revisions of some of the Council's publications are now under way and new editions will be published this year. The Council has continued to issue timely reports dealing with therapeutic products in addition to the regularly published articles of acceptance.**

**The work and reports of the Council concerned with sulfanilamide and sulfapyridine have been extremely useful and important and have served to impress physicians with the need for the exercise of care in the use of these drugs.**

**That interest in the work of the Council on Pharmacy and Chemistry is constantly growing is clearly shown by the increasing correspondence and by the large number of conferences in which members of the Council's staff are called on to participate.**

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## The Chemical Laboratory

At the time of the annual session in St. Louis in 1939 the Chemical Laboratory was badly damaged by a fire originating from causes not connected with any laboratory procedure. Much of the physical equipment of the Laboratory had to be replaced, and the walls, floors and laboratory furniture entirely refurbished. A satisfactory insurance adjustment was made and the Laboratory was completely renovated and, in some respects, greatly improved. For some weeks the work of the Laboratory was curtailed.

During the year the activities of the Chemical Laboratory were largely concerned with the examination of the constantly growing number of new products submitted to the Council on Pharmacy and Chemistry, with the establishment of standards for these products and with the reexamination of previously accepted products. Much attention has been devoted to the various brands of sulfanilamide, and during the year standards for sulfapyridine were established.

The new product sobisminol (and sobisminol solution) has been the subject of intensive study in the Laboratory with a view of establishing satisfactory standards. Other important investigations have been concerned with racephedrine and its salts; a solution of sulfanilamide in a glucose complex; determinations on stability of mercurials after prolonged storage; estrogenic substances; vitamin preparations obtainable in pure form such as nicotinic acid, thiamin chloride and others; gastric mucin; sodium citrate and sodium chloride for the purposes of blood transfusion banks; various vasoconstrictors, and mercury and bismuth compounds.

The microchemical and spectrographic divisions are constantly in operation and have contributed greatly to the efficiency, accuracy and facilitation of the work of the Laboratory.

Members of the staff have appeared before several important scientific societies during the past year.

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## Council on Physical Therapy

The Council on Physical Therapy has continued its investigations of physical apparatus and methods and the issuance of reports based on such investigations, and has endeavored to promote the use of sound physical therapeutic measures and to encourage research in the field of physical therapy. The Council has attempted to gather and to disseminate information that will be helpful to physicians in determining the therapeutic value of devices and methods employed in administering physical therapy.

Important activities of the Council during the last year included the consideration of audiometers and hearing aids, inhalators and resuscitators, radium and radon seeds, short wave diathermy equipment, galvanic generators, "fever therapy" appliances, respirators and radio interference said to be caused by electromedical equipment.

### AUDIOMETERS AND HEARING AIDS

In its investigations pertaining to audiometers and hearing aids, the Council has had the advantage of active and intensive cooperation on the part of a number of highly qualified con-

sultants, who have devoted a large amount of time and effort to the study of such apparatus and devices as diagnostic and ameliorative aids. Minimum requirements for the acceptance of audiometers for inclusion in the official lists of the Council have been adopted and published, and, up to the time of the preparation of this report, two audiometers have been accepted. The manufacturers of other audiometers apparently have recognized the requirements established by the Council as being reasonable and just and will, no doubt, attempt to meet these requirements.

Much attention has been devoted by the Council on Physical Therapy and its consultants to the study of hearing aids. Recently a new form of hearing aid, the vacuum tube type, has been produced and probably will assume an important place in this particular field. For some years the carbon microphone hearing aid has been the most popular appliance but, because of phenomenal advances and developments in radio circuits and in the application of radio engineering principles, vacuum tube hearing aids utilizing crystal microphones and receivers and amplifying tubes are being perfected to a high degree. The weight of these wearable appliances has been considerably reduced. It is yet too early to determine the relative efficiency of performance of these devices, their upkeep or their ability to stand up under exacting requirements.

The Council's consultants have been studying possible methods for calculating percentage loss of disability due to deafness. Several methods have been proposed, but none have yet been accepted.

The action of the House of Delegates in St. Louis, 1939, approving the program of the Council to formulate a method of determining ear disability has met with favor from otologists, compensation boards, courts of law and others interested in the problems of the deafened.

### RADIO INTERFERENCE

One of the most immediate problems confronting the Council and the users of electrotherapeutic apparatus is that concerned with the elimination of radio interference caused by such apparatus. Officials of the Federal Communications Commission, other governmental agencies and manufacturers have actively cooperated with the Council in the attempted solution of this problem. Two methods for the elimination of radio interference have been proposed and are now being carefully studied in the hope that a solution can be effected whereby electrotherapy apparatus can be made available for use without undue cost or other hardship to the profession, to manufacturers of such apparatus or to the public.

One of the methods proposed involves the screening of treatment rooms and the other the reservation of a definite frequency band in the electromagnetic spectrum.

### RESEARCH

Through its Committee on Research, the Council on Physical Therapy has awarded five grants in aid of research: (1) to assist in experimental work on the effect of heat in bone and joint repair, (2) for the investigation of proper methods of shielding diathermy equipment, (3) for the investigation of dosage meters, (4) for the investigation of the subject of artificial respiration and (5) for the determination of the effect of physical therapy procedures on the temperature of human muscles and the influence of various forms of electrical currents and various methods of application of massage.

The results of several investigations supported by grants of the Council have been published.

### INVESTIGATION OF APPARATUS

The consideration of apparatus and the publication of reports based on the Council's investigations have constituted major activities of the Council. In numerous instances the Council has found it necessary to reinvestigate and reconsider submitted appliances several times before final reports could be published. This has been especially true with respect to short wave diathermy apparatus.

Reports on fifty-one pieces of apparatus have been published in THE JOURNAL. In a number of instances apparatus has been withdrawn from the market when the Council's reports have been made available to manufacturers, who will in most instances, it is confidently expected, make earnest efforts to perfect the machines which they produce.

The book "Apparatus Accepted" is in process of revision and is expected to be ready for distribution within a short time. The previous editions of this book have had a wide distribution, and many physicians have reported that they have found it a valuable aid in the selection of apparatus.

### SUN LAMPS

Minimum requirements for the acceptance of sun lamps have been revised, officially adopted by the Council and published. To meet qualifications under the requirements of the Council, radiation characteristics of wavelengths shorter than 2,800 angstroms should not be in excess of the total ultraviolet energy, that is, 1 per cent of the total ultraviolet energy between 2,804 and 3,132 angstroms. Under the Council's requirements, therapeutic claims made for sun lamps are restricted to the extent that it may be claimed that these lamps may prevent rickets, may aid in promoting the soundness of bones and teeth and play an important part in the deposition of calcium. Claims for the prevention and cure of colds, for the building up of resistance and for the prevention of respiratory diseases are not accepted for the reason that satisfactory clinical evidence to substantiate such claims has not yet been submitted.

### ROENTGEN RAY AND RADIUM

The Council has proceeded cautiously in its investigation of roentgen ray apparatus, its investigations being largely confined to small equipment. In the investigation of large installations, the Council has sought the cooperation of the National Bureau of Standards. This bureau in the past has generously extended cooperation to the Council in other fields of investigation. It is understood that the National Bureau of Standards is enlarging its facilities for investigation of roentgen ray apparatus regardless of size.

With the aid of consultants, two articles on roentgen rays are in process of preparation, one dealing with the dangers of roentgen rays and the other with minimum standards for fluoroscopes. The Council's consultants have strongly urged that physicians who undertake the use of roentgen ray equipment should be thoroughly qualified. The Council strongly recommends that all physicians desiring to make use of radium or radon should first obtain specialized instruction. The Council has recorded its official opinion to the effect that the indiscriminate use of radium or radon is a dangerous practice and that prescription of these products by mail should not be encouraged.

### ABDOMINAL SUPPORTS, CORSETS AND TRUSSES

The Council has decided that after Jan. 1, 1940, it will not consider abdominal supports, corsets or trusses. The fitting of these devices is a highly individualized practice, and in many instances fittings by laymen may or may not produce the therapeutic effect desired by the attending physician. In view of the lack of control of the fitting of such devices, the Council has deemed it necessary to remove them from its official consideration.

### EDUCATIONAL WORK

The Council has attempted to be helpful to physicians who wish to practice sound physical therapy. Council members and consultants have delivered approximately eighty lectures and radio talks of an educational nature, and motion pictures illustrating the use of sound physical therapy devices and methods have been shown on 227 occasions.

The Handbook of Physical Therapy, published under the auspices of the Council, has recently undergone revision.

The following articles have been published in THE JOURNAL, having been prepared at the instance of the Council:

Minimum Requirements for Acceptable Audiometers.
Fever Therapy by Physical Means. Frank H. Krusen, M.D., and Earl C. Elkins, M.D.
Medical Diathermy.
Radon Seeds: Physical Considerations. Do They Leak and Do They Irritate Tissues? Edith Quimby and A. U. Desjardins, M.D.
Atrophy and Regeneration of the Gastrocnemius-Soleus Muscles. Herman Chor, M.D., David Cleveland, M.D., H. A. Davenport, M.D., Ralph E. Dolkart and Gertrude Beard.

### Summary

**The Council on Physical Therapy continues to perform its function of investigating and issuing reports on physical therapy apparatus and methods, of recommending sound physical therapeutic measures and of encouraging research.**

**Minimum requirements for acceptable audiometers have been published, and the Council has considered several new vacuum tube hearing aids. The House of Delegates has endorsed the work of the Council in the formulation of a method of calculating percentage loss of disability due to deafness.**

**The consideration of apparatus and the publication of reports have been the major activities of the Council. A new edition of Apparatus Accepted is being made ready for distribution.**

**Five grants in aid of research were awarded during the year.**

**The problem of securing the most desirable means for eliminating radio interference caused by electromedical equipment has been one of the major issues commanding the attention of the Council. Two methods, one the screening of the treatment room and the other the reservation of a definite frequency band in the electromagnetic spectrum, have been suggested.**

**The minimum requirements for the acceptance of sun lamps have been revised, adopted and published.**

**The Council is seeking the cooperation of the National Bureau of Standards in the investigation of large installations of roentgen ray apparatus. Two articles, one on the dangers of roentgen rays and another on minimum standards for fluoroscopes, are being prepared.**

**The Council on Physical Therapy has again gone on record condemning the indiscriminate use of radium and radon.**

**The Council has been active in its educational work designed to assist those who wish to practice sound physical therapy. This has been done mainly through radio talks, lectures and motion picture films. Several articles and a new edition of the Handbook of Physical Therapy have been published.**

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## Council on Foods

The Council on Foods, while still giving consideration to individual food products, is directing its attention more and more to broad nutritional questions and is attempting to encourage research in the field of nutrition. It endeavors to compile and disseminate information based on scientific investigations developed by the members of the Council, its consultants and other workers, to encourage the application of scientific knowledge in the manufacture of food products and in the preparation of foods and to discourage unwarranted claims in advertising and in other promotions of manufactured foods.

The members of this Council, as do the members of other councils of the Association, serve without compensation, and no fee or payment of any kind is required from those who submit products for official consideration by the Council. All actions, whether in the consideration of food products or of reports prepared for publication, represent the group opinion of all members of the Council.

### ACCEPTED FOODS

The book Accepted Foods and Their Nutritional Significance, recently published, is the official compendium of the work of the Council on Foods. This book provides a brief summary of the decisions of the Council regarding food products and nutritional claims that can be properly made for them. The rules under which the Council operates are presented in the book, as are the products accepted by the Council for inclusion in its official lists. In Accepted Foods and Their Nutritional Significance there is discussion of the claims that can properly be made for a food product according to its composition. This discussion is concerned with the estimated daily requirement for each of the dietary essentials and the proportion of this requirement which certain foods supply in average portion or in an amount that can be consumed in a day, the relative frequency with which an item of food may reasonably appear in the ordinary diet, the availability of the food product from the point of view of cost and the ease or difficulty with which any given dietary essential is obtainable. It is pointed out that the rating of foods intended for the feeding of the sick or for feeding infants must be given special consideration because the problems involved are different from those connected with the use of ordinary staple foods by well persons. Manufacturers or others interested may apply the principles developed by the Council as presented in this book to determine what constitutes suitable claims for any food product of which the composition is known, and it is possible for a producer of foods to determine for himself just what general or nutritional health claims can be properly made.

Numerous examples of vague and inaccurate claims and of the misuse of terms are cited. Various sections of the book are devoted to a discussion of classes of foods such as fats, oils and their products, fruit juices, canned and dried fruits, grain products, preparations for infant feeding, fish and sea foods, milk and milk products, foods for special dietetic purposes, sugars and syrups, vegetables and unclassified and miscellaneous foods. It is believed that Accepted Foods and Their Nutritional Significance constitutes an important contribution on the part of the Council that will greatly aid physicians, investigators in the field of nutrition and manufacturers of food products in acquiring helpful information and in applying scientific knowledge concerning foods and their uses.

### COUNCIL REPORTS

The Council has continued the issuance of official reports. Among those published during the year was one prepared by Dr. George R. Cowgill, a member of the Council, on "The Need for the Addition of Vitamin $B_1$ to Staple Foods," and another on "The Loss of Vitamin C in Orange Juice on Standing," based on analyses made by Dr. H. J. Fisher of the Connecticut Agricultural Experiment Station at the request of the Council. Other published reports have dealt with vitamin mixtures, claims for food products rich in certain vitamins, lead in foods, the fluorine content of foods and the fortification of foods with vitamins and minerals.

An article prepared by Dr. Philip C. Jeans, a member of the Council, presented a concise summary of the pertinent facts concerning homogenized milk. This article was published in HYGEIA and served as the basis for a discussion of this relatively new type of milk in Accepted Foods and Their Nutritional Significance.

During the year each issue of HYGEIA has contained an article describing in nontechnical terms the nutritional value of various classes of foods. These articles, based on Council opinions, have been prepared in the office of the Secretary of the Council and have done much to inform the public as to the nature of the work the Council is attempting to do.

### FORTIFICATION OF FOODS

As a result of studies conducted by the Cooperative Committee on Vitamins, representing this Council and the Council on Pharmacy and Chemistry, the following statement of policy was adopted by the Council on Foods.

> The Council on Foods desires to encourage the restorative addition of vitamins or minerals or other dietary essentials in such amounts as will raise the content of vitamin or mineral or other dietary essential of general purpose foods to recognized high natural levels, with the provision that such additions are to be limited to vitamins or minerals or other dietary essentials for which a wider distribution is considered by the Council to be in the interest of the public health.
>
> The Council is opposed to the indiscriminate fortification of general purpose foods with vitamins or minerals or other dietary essentials. By fortification is meant the addition to a food of such an amount of a vitamin or other dietary essential as to make the total content larger than that contained in any natural (unprocessed) food of its class.

Under the joint sponsorship of the Council on Foods and the Council on Pharmacy and Chemistry, authoritative reviews of vitamins were published as a symposium in THE JOURNAL in 1938. These articles were revised in order to bring the material up to date and were published in book form in 1939. This volume affords a concise treatise on the chemistry, physiology, nutritional aspects and therapeutic usefulness of the important vitamins as well as of some of the less well known substances and has been widely distributed.

### RULES AND DECISIONS

No changes were made during the year in the official rules of the Council except for the purposes of explanation and clarification, and there has been little change in the nature of decisions regarding advertising claims. The Council has pub-

lished a statement setting forth what it believes constitutes allowable claims for the vitamin and mineral content of canned foods and vegetables intended for infant feeding. Available evidence indicated that the processing of these foods does not result in any marked reduction in the vitamin A, riboflavin or mineral content of the fresh food. On the other hand, vitamins $B_1$ and C are known to be somewhat readily destroyed, and no claims for the retention of these vitamins in canned foods and vegetables for infant feeding are recognized by the Council unless they are definitely supported by satisfactory evidence. Another decision of the Council had to do with fluid milk products for which soft curd claims are made. Under this decision the Council has held that a curd tension of 20 Gm. or less as measured by the usual methods must be demonstrated, and that it must be shown that the supply of milk and the processing result in a product that uniformly has this low curd tension. Among other decisions of the Council were those pertaining to iodized salt and to a stabilizer containing calcium thiosulfate and calcium oxide developed to aid in the retention of iodine by salt on standing. The Council has ruled that this stabilizer is acceptable for inclusion in the official lists of the Council.

COUNCIL MEMBERS AND CONSULTANTS

Dr. Joseph Brennemann of Chicago and Dr. E. M. Bailey of New Haven, Conn., found it necessary to resign as members of the Council at the expiration of their terms of membership in 1939 because of the pressure of other duties. Both of these gentlemen served faithfully and efficiently, and the Council regrets that it will not longer have the benefit of their extremely helpful service. Dr. Tom D. Spies of Cincinnati and C. S. Ladd of Bismarck, N. D., were elected to fill vacancies on the Council. Among the consultants who have cooperated actively with the Council during the year and have rendered most valuable service are Drs. Hugh R. Butt, Adam A. Christman, Kate Daum, Grace MacLeod and Genevieve Stearns, Prof. Henry C. Sherman and Miss Mary A. Foley.

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### Summary

**During the year the Council on Foods continued to give consideration to individual food products, but its attention is being directed more and more to broad nutritional questions. The Council attempts to encourage the application of scientific knowledge in the manufacture of food products and research in the field of nutrition while it tries to discourage unwarranted claims for advertising and promotions of manufactured foods.**

**The recently published book Accepted Foods and Their Nutritional Significance, which constitutes the official compendium of the work of the Council on Foods, presents a summary of the decisions of the Council, the rules under which the Council operates and the products accepted by the Council for inclusion in its official lists. Manufacturers or others interested may apply the principles developed by the Council as presented in this book to determine what constitutes suitable claims for any food product of which the composition is known.**

**Important official reports of the Council published during the year have dealt with the need for the addition of vitamin $B_1$ to staple foods, the loss of vitamin C in orange juice on standing, vitamin mixtures, claims for food products rich in certain vitamins, lead in foods, the fluorine content of foods and the fortification of foods with vitamins and minerals.**

**Each issue of Hygeia during 1939 contained a nontechnical article based on Council opinions describing the nutritional value of various classes of foods. An article concerning homogenized milk also was published in Hygeia.**

**As a result of studies conducted by the Cooperative Committee on Vitamins, a statement of policy was adopted in which the Council indicated its desire to encourage the restorative addition of vitamins, minerals or other dietary essentials in such amounts as to raise the vitamin, mineral or other dietary essential content of general purpose foods to recognized high natural levels, and its opposition to the indiscriminate fortification of general purpose foods. The reviews of vitamins which were published in The Journal in 1938 were revised, brought up to date and published in book form in 1939. A statement of what the Council believes constitutes allowable claims for the vitamin and mineral content of canned foods and vegetables intended for infant feeding was published in 1939. Numerous decisions of the Council dealt with food products of various kinds.**

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## Council on Industrial Health

Shortly after its establishment in 1937, the Council on Industrial Health outlined a program of work which included as some of its major objectives the following undertakings: (1) to provide information concerning the objectives and methods of industrial health; (2) to investigate activities in the field of industrial health engaged in by lay and professional organizations; (3) to study medical nomenclature and other problems relating to the classification, indexing and recording of occupational diseases; (4) to review compensation laws and proposals for new laws which may have an effect on industrial health.

During 1939 the Council on Industrial Health undertook specific activities to advance this program, as follows:

EDUCATION

*Annual Congress on Industrial Health.*—The second Annual Congress on Industrial Health, held in Chicago in January 1940, included presentations of administrative industrial medical details as well as round table discussions intended for chairmen and members of committees on industrial health of state medical associations and discussions of practical problems in industrial medicine and traumatic surgery. In the opinion of the Council these congresses fulfil a very useful function, and regular repetition is justified.

*Special Industrial Health Number of The Journal.*—Special investigations were undertaken and material was collected as the basis for the Industrial Health Number of THE JOURNAL, which was recently published.

*Publications on Medical Organization in Industry.*—A number of articles have been completed and others are in preparation which will explain specific functions of medical service to industry and will be of greatest value to physicians who serve in industry only casually.

*Special Articles on Occupational Disease.*—On completion of the articles on medical organization in industry, a further series is projected which will facilitate access to authoritative information on the nature, incidence, duration and end results of exposure to unhealthful occupational materials, processes or environments.

*Clearing House.*—The Council itself or through consultants is answering inquiries about industrial matters in substantial numbers. Many of these were answered formerly by other agencies in the American Medical Association. A considerable body of useful material has been collected, indexed and filed to facilitate answers to inquiries received from physicians and from the public.

*Survey of Industrial Medical Education.*—During the past year the Council has inquired of all medical schools, schools of public health, graduate schools and other sources concerning the extent and character of attention assigned to industrial health in undergraduate and postgraduate curriculums. The results of this study were tabulated for publication in the special Industrial Health Number of THE JOURNAL. In both classifications the opportunities for physicians have been strictly limited. It is the hope of the Council on Industrial Health that investigations of this character will impress on educators the need for greater attention to fundamentals of sound industrial medical service.

*Industrial Hygiene Syllabus.*—The survey of industrial medical education has convinced the Council that one reason for limited teaching arises from a lack of clear definition of what needs to be taught. A syllabus for industrial hygiene instruction, therefore, is in preparation, which it is hoped will be acceptable to the Council on Medical Education and Hospitals and subsequently to the medical schools as a basis for more extensive teaching programs.

*Contact with Constituent State and Component County Medical Societies.*—One of the most important features of the Council's educational program has grown out of the realization that

training of physicians with respect to industrial health will be greatly facilitated through the participation of state medical associations. At the suggestion of the Council, thirty-four of the constituent state associations have formed committees on industrial health or have indicated existing agencies through which the Council can act in its efforts to clarify and to elevate standards of industrial health. Already considerable educational activity has been developed by this means in meetings and in state medical society journals. To facilitate interchange of information between the Council and the state committees, a bulletin has been developed through which it is felt objectives will more rapidly be realized. The influence of the state committees is already being extended into component county medical societies, a circumstance of first importance, since industrial health problems are encountered earliest in the county organizations and dealt with most directly there. The Council on Industrial Health expects to lend every encouragement possible to these activities and has considered that, if necessary, field activities could profitably be directed toward assisting in the development of proper medical leadership to meet local problems.

*Exhibits.*—An exhibit on silicosis and asbestosis is being prepared for demonstration at meetings of constituent state medical associations and elsewhere. Other exhibits are contemplated which will deal with important features of industrial health.

### RELATIONSHIPS WITH GROUPS AND ORGANIZATIONS

The Council on Industrial Health has expanded its knowledge of activities of numerous lay and professional organizations and of governmental and private facilities. The influence of social security legislation on the rapid extension of industrial hygiene activity into the state departments of health has been looked on with much interest. A few large industrial medical services have been visited, and reports about the nature of the industrial medical service supplied have been filed. In all other readily accomplished ways the office of the Council has attempted to keep in touch with the activities of manufacturing, trade and labor associations and with the developments in field and laboratory investigation which have occurred during the past year. The Council proposes to continue acquiring information of this type and to make it available to the general medical profession.

The Council has also maintained close working relations with other agencies in organized medicine in addition to contacts with constituent state and component county medical societies. Matters relating to industrial affairs previously undertaken by other bureaus and councils have been referred to the Council on Industrial Health for solution. The Council hopes also to promote the inclusion of appropriate aspects of industrial health as features of programs in the various sections of the Scientific Assembly.

### NOMENCLATURE IN INDUSTRIAL HEALTH

The study of nomenclature in the field of industrial health has been continued with the objective in mind of defining usages and industrial medical parlance so that ultimately there may be some common acceptance of meaning and interpretation. This work has suggested additional useful activities, notably the preparation of a bibliography of authentic industrial health literature and surveys of the recording and reporting of occupational disease.

### WORKMEN'S COMPENSATION

As a preliminary investigation in the exceedingly complex field of medical relations under workmen's compensation administration, a survey of medical advisory staffs to compensation authorities has been started with particular reference to direct or indirect relationships which may exist with official medical organizations.

### NEW ACTIVITIES

During the year other problems have been submitted to the Council as deserving of its attention. The more important of these problems are as follows:

*Physical Examination in Industry.*—There are sound reasons for the belief that preemployment and periodic physical examinations in industry if properly conducted are of real value to employers and employees alike and that this practice will grow. The Council is interested in the scope of these examinations, the character of the report forms, the privileged nature of the records, the relation to workmen's compensation, the conditions that will influence employment or its continuation after examination, the cost and who will be called on to provide the service. The whole problem is one of unusual interest and will probably form the basis for separate reports from time to time.

*Standards of Industrial Medical Practice.*—The Council has considered from the outset that there is real need for improving the status of industrial physicians as ethical practitioners and that this status can be reached most rapidly through the establishment of standards of conduct somewhat specific in character which would have the effect of defining and clarifying all relationships between the physician in industry and the employer, the employee and his fellow physicians. The groundwork for such a report has been prepared.

*Occupational Disease Reporting.*—The Council has been impressed with the unsatisfactory nature of occupational disease reporting by physicians and the scarcity of available statistics on the incidence of occupational disease. Inquiries have been directed to each state health department and compensation board to determine present practices. Relatively few make any provision for adequate receipt and publication of occupational morbidity and mortality statistics to the end that it is almost impossible to obtain adequate information in this country on the incidence of occupational disease. The Council proposes to determine how it may contribute to improved occupational disease reporting.

*Industrial Nursing Education.*—The professional status of the nurse in industry has engaged the attention of the Council, which has felt that some initiative might be taken to improve qualifications, education and experience for these important assignments.

*Census of Physicians.*—The Council has enlisted the assistance of officers of constituent state and component county medical societies and of committees on industrial health in the constituent state medical associations to obtain as complete a list as possible of physicians engaged in full or part time industrial medical service. Although this list is still incomplete, a total of almost 3,000 names has been received. Many of these physicians have been helpful to the Council by defining the nature of their industrial medical services, classified by size and type of plant. The accumulation of information of this character is essential as the basis for efforts to improve standards of industrial practice and to elevate the status of the industrial medical practitioner.

### Summary

**The features of the educational program undertaken by the Council on Industrial Health have included the promotion of an Annual Congress on Industrial Health, the publication of a special Industrial Health Number of The Journal of the American Medical Association, the preparation of special articles on medicine in industry and on occupational diseases, the development of exhibits on industrial health, the furtherance of the Council's function as a clearing house of information and a survey of industrial medical education—undergraduate and postgraduate—to serve as a basis for specific recommendations concerning expansion of adequate industrial medical teaching.**

**At the request of the Council, thirty-four constituent state medical associations have organized committees on industrial health or have indicated existing agencies through which the Council can act in efforts to elevate standards in the field of industrial health. A bulletin has been developed to facilitate interchange of information between the Council and state committees.**

**The Council has continued to investigate and has attempted to interpret for the general profession the activities of lay and professional groups interested in industrial health.**

**Studies of terminology in industrial health are being carried on with the view of the preparation of a bibliography, which, it is hoped, will aid in improving the standards of the reporting of occupational diseases by physicians.**

**Efforts are also being directed toward the development of more extensive and more accurate morbidity and mortality statistics.**

**A survey of medical advisory staffs to workmen's compensation authorities is near completion. Physical examinations in industry and the need for accurate data defining the scope, technics, laboratory work and costs of such examinations have commanded the active attention of the Council.**

**A census of industrial physicians has been undertaken, and the cooperation of such physicians in the matter of defining the nature of industrial medical services according to size and type of industry and their advice concerning the training necessary for successful industrial medical service have been solicited. Effort has also been made to establish a census of industrial clinics, and the Council has attempted to develop interest in industrial nursing education.**

**The preparation of a statement outlining standards of industrial medical practice, which may have far reaching influence in defining the proper relationships and activities of the physician in industry, is under way.**

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## Bureau of Health Education

The work of the Bureau of Health Education, until recently known as the Bureau of Health and Public Instruction, has for the most part been directed along the same lines as heretofore reported to the House of Delegates, though there has been a significant increase in volume.

During the year the Bureau received and answered more than 10,000 letters from laymen. Regular Bureau correspondence included the receipt of and replies to more than 5,000 letters, while miscellaneous mail, including communications stimulated by the Association's radio broadcasting program and those received from persons who visited the Association's exhibits at the New York World's Fair and at the Golden Gate International Exposition in San Francisco, amounted to approximately 4,500 pieces.

### RADIO PROGRAM

In cooperation with the National Broadcasting Company, the second series of the program "Your Health" was completed in June 1939, at which time the fourth season of dramatized network broadcasting terminated.

A new series of radio broadcasts under the title "Medicine in the News" was begun in November 1939. These programs are coordinated with the date of issue of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and are based each week on articles, editorials and clinical and minor notes appearing in THE JOURNAL for the same week and, to some extent, on current articles appearing in HYGEIA. This radio program is scheduled for Thursday afternoon, which is the release date of the AMERICAN MEDICAL ASSOCIATION NEWS, the successor to THE JOURNAL and HYGEIA clipsheet. Thus the AMERICAN MEDICAL ASSOCIATION NEWS and the radio broadcast appear coordinately two days in advance of receipt of THE JOURNAL by its subscribers.

State and county medical societies and the Woman's Auxiliary have continued their valuable cooperation in publicizing the Association's broadcasting program. Seventy stations on the Blue Network were reported as participating in the broadcasting of this program in December 1939. Twelve broadcasts, including two National Broadcasting Company networks and one Columbia Broadcasting System network, were made during the St. Louis session.

The radio library maintained by the Bureau provided approximately 5,300 prepared radio "talks" that were sent out on request. Thirty-six medical societies received material from the radio library for the first time in 1939. Approximately 125 county and state medical societies received through the Bureau of Health Education timely material suitable for special broadcasts. The members of the Bureau's staff delivered eleven radio addresses in 1939 over stations located in various cities.

Advice and suggestions with regard to outside radio programs were offered in 145 instances. One health department in New York State asked for and received permission to print and distribute copies of one radio "talk," this health department having been authorized by the county medical society immediately concerned to use the material prepared by the Bureau of Health Education. The Bureau examined and checked 122 health items prior to broadcast for an important radio station in New York City.

### PROTECTION OF RESEARCH

The Bureau of Health Education has endeavored to cooperate with the Committee for the Protection of Medical Research and in May 1939 distributed more than 5,000 copies of a pamphlet entitled "Animals in Research" to the members of graduating classes of medical schools.

### COOPERATION WITH GOVERNMENTAL AGENCIES

As in previous years, the Bureau has continued its cooperation with departments of the federal government and of state governments, including health departments and departments of education, and has also cooperated as fully as possible with local departments of health, school boards and libraries. The states and their subdivisions to which service has been extended are too numerous to list in this report. The federal departments and divisions with which the Bureau has maintained cooperative relationship include the Federal Security Agency, the Department of Agriculture, the Department of the Interior, the Department of Labor and the United States Immigration Service.

The Director of the Bureau of Health Education has served for several years as a member of the Children's Bureau Advisory Committee. The Children's Bureau is interested in expanding maternal and child health work through state health departments and is committed to larger appropriations to be used for allotments to the states for this purpose. Programs originating in the states must be approved by the Children's Bureau. The development of merit system regulations during 1939 and of outlines of qualifications of personnel as well as of program objectives by the Children's Bureau indicate a definite tendency toward increased federal control, potential if not actual. Some of the regulations proposed by the Children's Bureau would seem to tend toward the concentration of the care of expectant mothers, of mothers and of young children, under social security schemes, in the hands of specialists rather than of general practitioners. There seems to be involved also a tendency toward having recent graduates in medicine specialize immediately, or very soon, after internship and special study.

### COOPERATION WITH LAY ORGANIZATIONS

*National Congress of Parents and Teachers.*—For a number of years the Bureau of Health Education has maintained cordial relations with the National Congress of Parents and Teachers. Heretofore the Association, through the Bureau of Health Education, has provided about one half of the examination forms used annually by the Congress of Parents and Teachers, but this arrangement has been terminated by official action of the congress, so that in the future these forms will be purchased by that organization. The Director of the Bureau has served as a member of the Advisory Committee to the Summer Round-Up, a cooperative project between the National Congress of Parents and Teachers, the medical and dental professions and health authorities.

*General Federation of Women's Clubs.*—The Director of the Bureau has been a member of the Advisory Committee to the General Federation of Women's Clubs, though it was not possible for him to attend the annual meeting of the federation held in San Francisco in 1939. At that meeting a resolution was adopted endorsing the objectives of the National Health Program and urging favorable consideration by the Seventy-Sixth Congress to provide through necessary legislation for the expansion of public health and maternal and child health service, expansion of hospital, clinical and other institutional facilities, medical services for medically needy persons and a general program of medical care developed by individual states in cooperation with the medical profession and other professional groups according to their respective needs. The resolution further provided that the General Federation of Women's Clubs should recommend to its member clubs study of the state and community needs for improved health and medical services and of "the ways in which the National Health Program can meet their needs."

*4-H Clubs.*—The Director of the Bureau has also served as a member of the National Committee on Boys and Girls Club Work (4-H Clubs). The annual "healthiest boy" and "healthiest girl" contest continues, but larger numbers of boys and girls are being named each year as "healthiest boys and girls." The 4-H Clubs propose to interest themselves in teaching their members about the importance of the prevention and treatment of tuberculosis. A program is to be developed in one state where there is an efficient 4-H Club organization, and the state medical society, the state tuberculosis association and the state department of health are to be consulted for cooperation and for the development of plans. This project is still being discussed.

*Joint Committee on Health Problems in Education.*—The Joint Committee on Health Problems in Education, through which the American Medical Association and the National Education Association have maintained cooperative relations since 1911, held its annual meeting in Cleveland in 1939. The committee was reorganized under the following general principles:

1. A joint committee shall be established of the two organizations as a whole and not of any department or section of either one.

2. It shall include no representatives of other health agencies and shall be strictly a joint committee of the participating organizations.

3. The committee shall consist of five representatives of each organization, who shall be appointed to serve one, two, three, four and five years respectively for their first terms and for five year terms thereafter and shall not be eligible for more than two successive terms.

4. The committee shall have a chairman, a vice chairman and a secretary-treasurer, who shall be elected annually from among the members of the committee by the Hare system of proportional representation.

The reorganization had previously been approved in principle by the Board of Trustees of the American Medical Association and by the Executive Committee of the National Education Association.

The principal objectives of the Joint Committee on Health Problems in Education have been defined as follows:

(*a*) To promote a better understanding between physicians and teachers.

(*b*) To bring to bear on health problems in education the best thought in medicine and in pedagogy.

(*c*) To identify health problems in education and endeavor to promote constructive solutions for them.

(*d*) To seek publication of the conclusions of the committee through the columns of the periodical publications of the participating organizations whenever possible and to publish pamphlets principally as reprints or when special indications for such publication exist. The policy of the committee was modified to minimize the publication of pamphlets and to seek expression of the committee's activities through symposiums and through publication in health periodicals.

The Joint Committee as reorganized is composed of Dr. Charles C. Wilson, Dr. George Stoddard, Dr. N. P. Nielson, Miss Ann Whitney and Miss Fannie B. Shaw as representatives of the National Education Association, and of Dr. Edward Jackson, Dr. Isaac Abt, Dr. A. J. Chesley, Dr. Thurman B. Rice and Dr. W. W. Bauer as representatives of the American Medical Association. Dr. Charles C. Wilson, Hartford, Conn., is chairman and Dr. Thurman B. Rice, Indianapolis, is vice chairman.

A third Symposium on Health Problems in Education under the sponsorship of the Joint Committee together with the Section on Pediatrics, the Section on Preventive and Industrial Medicine and Public Health, the Section on Ophthalmology and the Section on Laryngology, Otology and Rhinology of the American Medical Association was held during the annual session of the Association in St. Louis. Arrangements have been made for a symposium on the same general subject during the New York session of the American Medical Association.

*American Public Health Association.*—The Director of the Bureau of Health Education is continuing his service as a section councilor of the Section on Health Education of the American Public Health Association.

Among other organizations with which the Bureau has maintained cooperative relations are the Committee on Public Health of the American Film Center, the Advisory Board of the American Camping Association and the Accident Prevention Conference of the United States Department of Commerce. The Director of the Bureau has, on invitation, attended several of the annual meetings of the Conference of State and Territorial Health Authorities of North America.

### COOPERATION WITH STATE AND COUNTY MEDICAL SOCIETIES

The Bureau has continued its endeavors to serve as a clearing house of information to state and county medical societies and to be of assistance in developing cooperative programs and satisfactory relationships between the medical profession and other organizations working toward similar ends.

### MEETINGS AND CONFERENCES

In 1939 the Director and the Assistant Director of the Bureau of Health Education appeared before 124 audiences in various parts of the United States. These appearances involved more than 40,000 miles of travel, and communities in eighteen states were visited. It was not possible to accept all the invitations extended to the Bureau's staff; forty-two such invitations had to be declined because of scheduled conflicts or for other important reasons. Attendance at twelve medical meetings addressed by members of the Bureau staff was 789. Eighty-three lay audiences were addressed with an attendance of approximately 30,000, and twenty-eight addresses were delivered before audiences composed of teachers, nurses and members of other professional groups with an attendance of more than 6,700.

### HYGEIA CLIPPING LOAN SERVICE

The clipping loan service of HYGEIA material continued in popularity during the year. Requests for this service originated in every state in the Union with two exceptions, and additional requests were received from Canada, Hawaii and Norway. HYGEIA clipping collections lent to individual physicians to aid them in the preparation of educational talks numbered 769.

### BUREAU PUBLICATIONS

Twenty-two new pamphlets were added to the list of publications maintained by the Bureau of Health Education, while six of the pamphlets formerly used were revised and two discontinued. More than 108,000 copies of the publications sponsored by this Bureau were sold in 1939.

A second series of health posters based on HYGEIA cover plates was prepared and published in 1939 after a large demand for the posters in the first series had developed. Sixteen such health posters made up into two sets, each set being provided at nominal cost, are now available.

The Director and Assistant Director of the Bureau have cooperated as fully as possible with the Editorial Department of THE JOURNAL and HYGEIA. Thirty-three articles originating in the Bureau of Health Education were published in 1939 in publications other than those of the American Medical Association.

### REVISION OF PERIODIC HEALTH EXAMINATION MANUAL

The Manual of Suggestions for the Conduct of Periodic Examinations of Apparently Healthy Persons was revised during the year by a committee appointed in 1938 by the Board of Trustees. The members of this committee are Dr. W. W. Bauer, Chairman, and Drs. Fremont A. Chandler, George H. Coleman, W. C. Danforth, Haven Emerson, Parker Heath, Leland S. McKittrick, Gordon B. New, William A. O'Brien, C. D. Selby and Paul D. White.

The following have cooperated with the committee as consultants: Drs. Walter C. Alvarez, Ruth Cowan Clouse, Robert L. Dickinson, Harold S. Diehl, Otto H. Foerster, Donald A. Laird, R. G. Leland, Lon W. Morrey, Carl M. Peterson, Paul A. Teschner and S. Bernard Wortis.

The revision of this manual was completed late in December of 1939, and the new edition will soon be published.

### Summary

**An important part of the work of the Bureau of Health Education is concerned with correspondence, and during the year covered by this report a total of 19,660 pieces of mail were handled.**

**Thirty dramatized programs were broadcast over the National Broadcasting Company network during the year. Approximately 5,300 pieces of broadcasting material were provided by the Bureau for the use of medical societies. Members of the Bureau's staff delivered addresses over local stations in various cities.**

**The Bureau of Health Education has maintained cooperative relationships with official agencies of the federal government and of state governments in all instances whenever possible, as well as with twelve organizations of national scope.**

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### Bureau of Legal Medicine and Legislation

On Jan. 1, 1940, at his own request, the retirement of Dr. William C. Woodward as Director of the Bureau of Legal Medicine and Legislation became effective.

The distinguished service that Dr. Woodward has rendered the Association is well known. Dr. Woodward directed the activities of the Bureau of Legal Medicine and Legislation from its organization in 1922 until his retirement. During these eighteen years he devoted his fine abilities unselfishly always to the betterment of organized medicine and, while none will begrudge him respite from official cares, his wise counsel and solid judgment will be sorely missed.

Mr. J. W. Holloway Jr., who has been associated with Dr. Woodward in the work of the Bureau since 1925, has been made Acting Director of the Bureau. Mr. George E. Hall Jr., a member of the bar in Illinois, has been added to the staff of the Bureau.

#### CORRESPONDENCE

During the period covered by this report, the Bureau has continued to serve as a clearing house of information concerning legislative and medicolegal problems of various types. It has cooperated with constituent and component medical societies in solving their problems in the fields covered by the activities of the Bureau and has, so far as the facilities of the Bureau permitted, provided such information as it is proper to provide for the use of individual members of the Association. Approximately 25 per cent of the correspondence during 1939 was with state associations, 50 per cent with individual physicians, 10 per cent with counsel for medical associations and for individual physicians, and the remainder with medical examining boards, hospitals, boards of health and a miscellaneous group of correspondents. The number of practicing attorneys who tap the medicolegal resources of the Bureau is constantly increasing.

#### COURT DECISIONS OF MEDICAL INTEREST

The Bureau receives each week copies of all published decisions handed down by the courts of the several states and of the United States. Such of these decisions as are of particular medical interest are retained in the files of the Bureau, and abstracts of the more important ones are prepared for publication in THE JOURNAL. During 1939 approximately 116 columns of medicolegal abstracts were so prepared and published. The Bureau has republished in book form the medicolegal abstracts that appeared in THE JOURNAL during the years 1926 to 1930 and during the years 1931 to 1935. The plan has been to publish a volume of these abstracts every five years, and consideration is being given to making available in a third volume the abstracts covering the years 1936 to 1940.

Several important decisions have been rendered since the last report of this Bureau was submitted to the House of Delegates. Two of these cases involved the validity of basic science acts. The Supreme Court of Arkansas on January 15, last, upheld the constitutionality of the basic science act of that state in the case of *Stroud* v. *Crow*. This case was prosecuted by members of the executive board of the Arkansas Medical Society to restrain the chiropractic board from issuing, as it had been doing, licenses to persons not possessing basic science certificates and to enjoin named chiropractors from continuing the practice of chiropractic, such chiropractors having obtained their licenses without having complied with the requirements of the basic science act. In Michigan the circuit court of Wayne County in January 1940 similarly held that the basic science act of that state infringed on no constitutional rights of persons attempting to obtain licenses to treat sick human beings. *George Timpona and Marie Hyland Timpona, his wife,* v. *Brown et al.* In both cases the state medical associations cooperated and rendered material aid in defending the public welfare against efforts to break down the protection provided by the imposition of the basic science requirement.

Another important case terminated in a trial court in Texas, in which the district court of Travis County, Texas, Fifty-Third Judicial District, upheld the right of the legislature to impose a citizenship requirement on applicants for licenses to practice medicine. *Manuel Garcia-Godoy* v. *State Board of Medical Examiners.* The importance of this case lies in the fact that it was the first time, as far as the records of the Bureau show, that a citizenship requirement in relation to medical licensure has been squarely before a court and in the further fact that the court bottomed its decision on the ground that the practice of medicine is not a "common occupation" but a profession impressed in many instances with semiofficial duties in connection with governmental birth, sickness and death records, with matters relating to communicable diseases and quarantine, with the execution of certificates of freedom from disease, with the enforcement of state and federal narcotic laws, and with many other duties of similar nature, all of which are imposed on physicians by the government in furtherance of policies adopted by the state for the welfare of the people as a whole. The court thought that a physician who is a citizen would be better able to cooperate with the state in carrying out its policies than a physician of foreign allegiance and training who is unfamiliar with the ideals and institutions of this country. To the State Medical Association of Texas should go much credit for the conclusion that the court reached in this case and for the reasons on which the court's judgment was predicated.

On Sept. 11, 1939, the United States Court of Appeals for the District of Columbia upheld the judgment of the lower court that Group Health Association, Inc., of the District of Columbia, was not engaged in the business of insurance. *Jordan* v. *Group Health Association, a corporation,* 107 F. (2d) 239. The gist of the decision was that the contract between the corporation and its members imposes no legally enforceable obligation on the corporation to furnish relief or service of any kind under any condition and that since the corporation assumes no risk to which a member may be subject the contract is not one of insurance. The court in reaching its conclusion referred to the contract as "unique."

One other decision that calls for special comment was abstracted in THE JOURNAL, Sept. 30, 1939. *State* v. *Karsunky* (Wash.), 84 P. (2d) 390. The case involved the liability of a so-called drugless healer for the death of a diabetic patient owing to the fact that the healer induced the patient to discontinue the use of insulin and to discontinue a regulated diet that had been prescribed by a doctor of medicine. The court said that a person who induces a diabetic patient to discontinue the use of insulin, when the use of that drug is necessary to preserve life, is guilty of manslaughter if the patient dies as a result of such action. In principle, the court thought, such inducement is equivalent to withholding insulin from the diabetic patient by physical force. As long as persons without scientific training and utterly ignorant of the causes, diagnosis and treatment of disease are permitted either by sanction of law or by toleration to assume responsibility for the treatment of sick human beings, tragedies such as the one that occurred in Washington must and will occur all too frequently.

Elsewhere in the report of the Board of Trustees will be found reference to the court decisions in the case of the *United States* v. *The American Medical Association* for alleged violation of the antitrust laws.

#### FEDERAL INCOME TAXES

The Bureau has continued the practice of preparing for publication in THE JOURNAL an annual statement on the federal income tax act to aid physicians in the preparation of the returns required by that act. The statement not only serves individual physicians directly but is used by many of the constituent state medical associations as a basis for similar statements published in state medical journals. Such a statement prepared by the Bureau was published in THE JOURNAL, Jan. 20, 1940. The only recent change that has been effected in the federal income tax situation as concerns peculiarly the physician was the enactment of a law by the Seventy-Sixth Congress under which the salaries of employees of state and local governments, including of course physician employees, were made subject to the federal income tax law and the salaries of federal employees, including physicians, may be subjected to state income tax acts. Heretofore such salaries have not been so taxable.

## FEDERAL LEGISLATION

Weekly during the period in which Congress is in session, abstracts of congressional bills of interest to the medical profession are prepared by the Bureau and published in THE JOURNAL. Since the Seventy-Sixth Congress convened to date, March 1, 1940, abstracts of 342 bills have been prepared and published in THE JOURNAL. In addition, special comments are prepared when the importance of a particular proposal justifies such a course.

In the Jan. 13, 1940, issue of THE JOURNAL, under the title "Medical Bills in the Seventy-Sixth Congress," there was published a summary of the federal legislative situation, prepared by the Bureau. In that summary reference was made to the laws of particular medical interest that had been enacted by the Seventy-Sixth Congress prior to the convening of the third session on January 3, to the proposed laws that had been defeated, and to the bills that were then pending. The changes that have since taken place which seem to merit recording are as follows:

*The Wagner National Health Bill, S. 1620.*—The Senate Committee on Education and Labor concluded hearings on this bill July 13, 1939, and thereafter submitted to the Senate a preliminary report expressing approval of the broad, general objectives of the bill but withholding commitment on its framework and detailed provisions. At the request of the committee, the Bureau prepared an analysis of the bill, which was published in the printed hearings. No further action had been taken on the bill up to the time of the preparation of this report.

*President Roosevelt's Hospital Construction Proposal.*—Following a White House conference with the committee appointed by the House of Delegates to confer with federal representatives concerning the National Health Program, representatives of hospital associations and certain federal officials, President Roosevelt, on Jan. 30, 1940, transmitted a special message to Congress in which he recommended a federal appropriation of from $7,500,000 to $10,000,000 to construct "small hospitals in needy areas of the country, especially in rural areas, not now provided with them." Title to the hospitals to be constructed, the President recommended, is to remain in the federal government but the costs of operations are to be assumed locally. "Treatment in such hospital," the President said, "would, of course, be available to men, women and children who literally can afford to contribute little or nothing toward their treatment."

Senator Wagner of New York, on behalf of himself and Senator George of Georgia, introduced a bill to carry into effect the President's recommendations, S. 3230. An identical bill was introduced in the House of Representatives by Congressman Lea of California, H. R. 8240. As this report is being prepared the Senate bill is pending in the Senate Committee on Education and Labor, the House bill in the House Committee on Interstate and Foreign Commerce. A copy of the President's special message, of S. 3230 and an editorial comment on the hospital construction proposal was published in THE JOURNAL Feb. 10, 1940, all of which material has been made available for distribution in reprint form.

Senator Wagner's bill authorizes an appropriation for the fiscal year ending June 30, 1941, of $10,000,000 and for each fiscal year thereafter such sums as Congress may believe to be necessary to assist states, counties and health or hospital districts "in providing better health and medical services through the provision of needed hospital facilities to serve rural communities and economically depressed areas." A National Advisory Hospital Council, to be composed of leading medical and scientific authorities who are outstanding in matters pertaining to hospitals and public health services, is to be created to advise the Surgeon General of the United States Public Health Service in carrying out the provisions of the act. Hospital projects, with respect to location and operation, must be approved by the Surgeon General. Such hospitals, it is contemplated, will be leased to the applicant for an indefinite period; but, if at any time the maintenance and operation of a hospital by a lessee fails to meet any of the provisions of the act, including presumably any rules that may be promulgated by the Surgeon General, then the lease may be terminated on six months' notice by the Surgeon General. The bill does not disclose the manner in which a hospital is to be operated after the cancellation of a lease. The term "hospital" is defined in the bill to include the physical facilities not only for the prevention, diagnosis or treatment of disease but for "the protection of the public health" as well.

This bill is indefinite with respect to important details, an indefiniteness that does not seem to be justified by the proposals submitted by President Roosevelt in his special message. It does not, for example, definitely limit the building of hospitals to areas that are financially unable to construct needed hospital facilities. It leaves unanswered the question as to the extent to which such hospitals are to engage in public health activities. It does not, as pointed out, indicate what is to become of a hospital after the lease has been cancelled. These and other obscurities seem to call for clarifying amendments.

*Mead Hospital Construction Bill.*—On February 6, Senator Mead of New York introduced a bill, S. 3269, being a revision of a bill he had previously introduced, proposing a federal appropriation of $300,000,000, to be administered by the Administrator of the Federal Works Agency, from which secured loans will be made to any public body and to any organization not operated for profit for the construction, equipment, repair, alteration, extension, improvement and "temporary operation and maintenance for a period not exceeding four years" of (1) hospitals, defined to mean any institutions or facilities for the treatment of illness or disease, including any health, diagnostic or treatment center, station, institution or clinic; and (2) plants and systems for the reduction of pollution in streams and water and sewerage works and systems; and (3) "related facilities." A part of this appropriation, not to exceed $100,000,000, may be devoted to hospital projects. Loans from this federal money will be repayable within a period not to exceed fifty years and will bear interest at the rate of 2 per cent a year. Hospitals constructed with the money made available by the bill must be turned over to the federal government for operation, at the request of the Surgeon General of the Public Health Service, during a state of war or a national emergency, the hospital being compensated in such an amount as the Congress may determine to be just and reasonable. In submitting the bill to the Senate, Senator Mead emphasized the fact that his bill in no wise conflicted with the Wagner Hospital Construction bill, which position he reemphasized in a radio address given by him over the Mutual Broadcasting System. The bill is pending in the Senate Committee on Banking and Currency. In the House, identical bills have been introduced, H. R. 8288, introduced by Representative Schulte of Indiana, and H. R. 8439, introduced by Representative Havenner of California, both pending in the House Committee on Appropriations, and H. R. 8547, introduced by Representative Starnes of Alabama, pending in the House Committee on Banking and Currency.

*Social Security Act Amendments.*—The President on Aug. 10, 1939, approved a law that effected numerous changes in the Social Security Act of 1935, many of which concern the physician only so far as he constitutes an integral part of the population in general. The new law did, however, authorize an increase of $2,020,000 in federal funds for maternal and child health, of $1,020,000 for services for crippled children and of $3,000,000 for public health. The old age insurance tax on employees and employers was frozen at 1 per cent for the years 1940, 1941 and 1942, and the benefits provided in the original act were extensively liberalized.

On the opening day of the Seventy-Sixth Congress Representative O'Day of New York proposed by H. R. 101 to strike from the old age and unemployment benefit provisions of the Social Security Act the paragraphs exempting service performed in the employ of corporations organized and operated exclusively for religious, charitable, scientific, literary or educational purposes, or for the prevention of cruelty to children or animals, no part of the net earnings of which inures to the benefit of any private shareholder or individual. This bill was considered by the House Committee on Ways and Means along with numerous other proposals to amend the Social Security Act, but action on it was postponed, it is understood, because of the opposition to it voiced by the churches, the argument being that if the Social Security tax was imposed on the churches it would constitute a heavy burden in view of the fact

that the tax could not well be passed along. Representative O'Day on Jan. 24, 1940, reintroduced her bill as H. R. 8118, but in such a form as to obviate the opposition of the churches. The revised bill proposes to strike from the Social Security Act the exemption paragraphs referred to in the previous bill and to insert in their places exemptions in favor of services performed in the employ of any church, synagogue or other institution devoted exclusively to services of worship. The bill is pending in the House Committee on Ways and Means.

*Food, Drugs and Cosmetics.*—The provisions of the new Federal Food, Drug and Cosmetic Act relating to dangerous drugs, dangerous cosmetics and new drugs became effective on the approval date of the act, June 25, 1938. Certain other provisions relating to labeling and to the use of coal-tar dyes in foods, drugs and cosmetics were by the act made effective twelve months after the date of enactment. On June 23, 1939, a new law was approved further extending the effective date of these provisions to Jan. 1, 1940, and directing the Secretary of Agriculture to promulgate regulations further postponing, to July 1, 1940, certain provisions so far as they related to specified types of labeling and containers. On Dec. 2, 1939, the Acting Secretary of Agriculture did promulgate regulations postponing to July 1, 1940, the effective date of the provisions of the act with respect to any type of lithographed labeling which was manufactured prior to Feb. 1, 1939, and to any type of containers bearing labeling which, prior to Feb. 1, 1939, was lithographed, etched, stamped, pressed, printed, fused or blown on or in such containers.

*The Lodge Health Insurance Bill,* S. 2963.—On Aug. 4, 1939, Senator Lodge of Massachusetts proposed by S. 2963 to add a new title to the Social Security Act providing for a system of health insurance to supply medical services to certain persons registered as unemployed for at least fifteen consecutive weeks at a public employment office or other agency approved by the Social Security Board. The bill proposes that every individual who qualifies under its provisions shall be entitled in any year, on the approval of his application by the Social Security Board, "to have forwarded to the doctor or hospital furnishing him with medical or hospital services, in part or full payment, for such services a sum equal to all or to any part of the health-insurance benefit to which such individual is entitled for such year," such benefits to be equal to one fifth of one per cent of such individual's total wages, except that such benefits shall not be in excess of $25 for one year and the total of all such benefits shall not be in excess of $100. The bill is pending in the Senate Committee on Finance.

*Army Medical Library and Museum Building.*—The Seventy-Fifth Congress authorized the construction in the District of Columbia of a new building for the Army Medical Library and Museum. While this law carried an authorization of $3,750,000 for the construction project, no appropriation was thereafter made so that the authorized sum could be made available. President Roosevelt, in submitting to the Seventy-Sixth Congress the budget for the fiscal year 1941, included an item of $600,000 for the acquisition of a site for the new building and for preliminary expenditures in connection with the contemplated construction of a new home for the library. The budget item contemplates that the building will be constructed on East Capitol Street, in Washington, adjacent to the Congressional Library Group. The House Committee on Appropriations must include in an appropriation bill the amount recommended in the budget and the bill must be passed by the Congress and approved by the President before the sum will be available. The committee named has been importuned to act favorably and expeditiously in this matter. Further delay with respect to the construction of the building will only accentuate the dangers inherent in the use of the present quarters, which are not fireproof and which are wholly inadequate to house in an accessible manner the vast collection of invaluable medical literature that comprises the Library.

*Researches with Respect to the Common Cold, "Flu" and Pneumonia.*—Senator Pepper of Florida introduced on Jan. 16, 1940, a bill, S. 3125, proposing an appropriation of $100,000 for use by the United States Public Health Service in conducting researches as to the cause, diagnosis and treatment of the common cold, "flu" and pneumonia, with a view to the development and prompt widespread use of the most effective methods of prevention, diagnosis and treatment of such diseases. The bill is pending in the Senate Committee on Finance.

*Grants-in-Aid to Prevent Stream Pollution.*—A bill introduced by Senator Barkley of Kentucky, S. 685, proposed to create in the United States Public Health Service a bureau of water pollution control and to authorize federal grants-in-aid to assist states, municipalities and public bodies to construct treatment works to prevent pollution of navigable water. The bill passed the Senate, May 1, 1939. In the House the bill was amended before its passage March 1, 1940, by the elimination from it of the provision relating to grants-in-aid and by the substitution therefor of authorization whereby the Reconstruction Finance Corporation may make loans to finance the construction of such treatment works. This amendment, it was stated on the floor of the House, was made at the suggestion of the President, who was reported to have said that "he did not want grants in the bill because it would be a direct obligation against the government" and would therefore further unbalance the budget. The Association has long contended that the principle underlying federal subsidies for health projects is fundamentally unsound.

*Control of Industrial Diseases by Labor Department.*—Senator Murray of Montana on Feb. 29, 1940, introduced a bill, S. 3461, proposing federal funds for allotment by the United States Department of Labor to the several states to aid them in providing, by promoting the prevention and control of industrial conditions hazardous to the health of workers, more adequate protection to workers and their families from economic losses caused by disability or death resulting from occupational diseases. In order to obtain any of this federal money a state must submit plans for approval to the Secretary of Labor. A plan may not be approved unless it provides, among other things, that it will be administered by or under the direction of the state labor department or other agency charged with the administration of the general labor laws of the state. The bill is pending in the Senate Committee on Education and Labor. A companion bill was introduced in the House March 1 by Representative Keller of Illinois, H. R. 8730, which is pending in the House Committee on Labor.

*Regulation of Seals of Approval.*—Representative Lemke of North Dakota introduced in the House on Feb. 23, 1940, H. R. 8625 by which he proposes that it shall be unlawful for any person, association, organization or company to use, sell, buy or exchange any seal, stamp or certificate of another person, association, organization or company denoting or implying equality or superiority in purity, quality, usefulness or effectiveness of any drug, food, cosmetic, therapeutic lotion, therapeutic device or diagnostic or surgical assists in comparison and competition with other products of like kind or similar nature unless authorized by the Federal Trade Commission. The bill is pending in the House Committee on Interstate and Foreign Commerce.

### STATE LEGISLATION

The Bureau subscribes for a legislative reporting service that keeps it informed on state legislation in the field of health. Information that the Bureau receives through this reporting service, when it seems of importance, is transmitted to the president, the secretary and the chairman of the legislative committee of the state medical society of the state concerned. Abstracts of bills of interest to the profession are prepared for publication in THE JOURNAL so that physicians may have timely information concerning legislative developments in their own states. From time to time the Bureau, at the request of state medical associations, prepares detailed analyses of pending proposals.

At the close of each calendar year the Bureau prepares for publication in THE JOURNAL a summary of all matters considered by the state legislatures in that year which are of particular interest to the medical profession. Such a summary has been prepared for 1939, the first instalment of which appeared in THE JOURNAL for March 9, 1940.

In a number of respects and particularly from the standpoint of medicine, 1939 was a significant year legislatively. The number and variety of legislative proposals the enactment of which would have had or do have a definite effect on the practice of medicine far surpassed those considered and acted on in any of the previous thirteen years during which the Bureau

has made a serious effort to study the state legislative scene. Reference may be briefly made to some of the more important laws enacted by the several states.

*Medical and Hospital Service Plans.*—Possibly prophetic of many other similar laws to come was the enactment in Connecticut, Michigan, New York, Pennsylvania and Vermont of laws authorizing the formation of nonprofit corporations to operate medical service plans on a prepayment basis. Generally these plans contemplate that the subscriber shall have available the services of a physician of his own choice and that the corporation will pay the bills incurred directly to the selected physician. In Missouri a law was enacted permitting fraternal benefit societies to operate plans whereby medical and hospital services may be rendered to members and their dependents. In Arkansas agricultural corporations were authorized to engage in any activity in connection with "the furnishing of medical, dental, health, hospitalization, nursing or any related services, or medicines or medical supplies to its members and/or their families."

The number of states having laws authorizing the formation of nonprofit corporations to provide hospital care to their members on a prepayment basis was enlarged in 1939 by the addition of Alabama, Connecticut, Florida, Iowa, Maine, Michigan, New Hampshire, New Mexico, Ohio, Rhode Island, South Carolina, Texas, Vermont and Wisconsin.

*Premarital and Antepartum Examinations.*—Laws requiring as a condition precedent to the issuance of a license to marry that each party to the proposed marriage present a physician's certificate of freedom from stated venereal diseases in an infectious state were enacted in California, Colorado, Indiana, North Carolina, North Dakota, Pennsylvania, South Dakota, Tennessee and West Virginia. Existing laws of this type in Illinois, Michigan and New York were so amended as to make them more workable.

Under laws enacted in California, Colorado, Delaware, Illinois, Indiana, Iowa, Maine, Massachusetts, Michigan, North Carolina, Oklahoma, Pennsylvania, South Dakota and Washington, a physician attending a pregnant woman or attending at delivery must obtain a specimen of her blood and must submit the specimen to an approved laboratory for a serologic test for syphilis.

*Dangerous Drugs.*—Particularly noteworthy were laws enacted in twelve states restricting the sale and distribution of certain barbiturates to sale or distribution on the prescription of a licensed physician, dentist or veterinarian. Similar laws with respect to sulfanilamide were enacted in eight states, to dinitrophenol in four states and to cinchophen in six states. California enacted laws prohibiting the sale or distribution for human consumption of dinitrophenol and of diphenylamine when used for eyelash or eyebrow dyes.

*Healing Arts.*—Basic science laws were enacted in Florida and South Dakota which will require all applicants for licenses to practice any form of the healing art in those states, before being permitted to be examined and licensed by their respective professional boards, to demonstrate to a separate board of examiners a comprehensive knowledge of anatomy, chemistry, pathology, physiology and bacteriology.

Laws limiting medical licensure to citizens of the United States or to persons who have declared their intention of becoming such citizens were enacted in eight states.

The New Jersey medical practice act with amendments adopted in 1939 now contemplates that after 1944 only unrestricted licenses to practice medicine and surgery will be issued.

Extensive amendments to the laws regulating the practice of osteopathy were adopted in Tennessee and New York. The Tennessee law grants osteopaths extensive rights in the field of medicine and surgery. The New York law will permit osteopaths to use instruments for minor surgical procedures and to use anesthetics, antiseptics, narcotics and biologic products if they satisfy the board of regents that they are qualified to do so.

Laws were enacted in South Dakota and Tennessee which provide, in effect, that in expending public funds for medical care no distinction is to be drawn between the legally authorized branches of healing. In South Dakota the law will permit each relief client to select a practitioner of his choice, regardless of school of practice.

COOPERATION APPRECIATED

The Board of Trustees, on behalf of the Bureau of Legal Medicine and Legislation, again expresses its appreciation for the fine cooperation the Bureau has received during the year from constituent and component associations and from individual physicians. Without that cooperation, the value of the service that the Bureau renders would be greatly lessened.

## Summary

**On Jan. 1, 1940, the retirement of Dr. William C. Woodward, who for eighteen years directed the activities of the Bureau with distinction, became effective.**

***Court Decisions of Medicolegal Interest.*—During the year several important court decisions of interest to physicians were rendered. Basic science acts were upheld in Arkansas and Michigan. A Texas court sustained the right of a state legislature to limit medical licensure to citizens. The contract between Group Health Association, Inc., District of Columbia, and its members was held to be "unique" but not insurance. In the state of Washington a so-called drugless healer was branded as a killer who caused the death of a diabetic patient by inducing him to discontinue the use of insulin.**

***Federal Income Taxes.*—Salaries of physicians employed by states or political subdivisions are now taxable under the federal income tax act, and state income taxes may be imposed on physicians employed by the federal government.**

***Federal Legislation.*—The Senate Committee on Education and Labor submitted a preliminary report on the Wagner National Health Bill approving its general objectives but withholding commitment on its details.**

**President Roosevelt in a special message to Congress recommended a hospital construction program, and bills have been introduced to effectuate that program. Other bills have been introduced proposing federal loans for the building of hospitals and of sewerage treatment works.**

**The Social Security Act was amended to increase federal appropriations for maternal and child health, for services for crippled children and for public health. A pending proposal would bring within the coverage of that act organizations operated exclusively for charitable, scientific, literary or educational purposes, but not for religious purposes.**

**The effective date of certain provisions of the Federal Food, Drug and Cosmetic Act has been postponed to June 30, 1940.**

**Under the provisions of the Lodge Health Insurance Bill, medical services rendered to qualified unemployed individuals would be paid for from federal funds, subject to prescribed limitations as to the amount thus to be paid.**

**President Roosevelt included in his budget message an item for the acquisition of a site on which to construct a new building for the Army Medical Library.**

**Researches by the United States Public Health Service as to the cause, diagnosis and treatment of the common cold, influenza and pneumonia is contemplated by a pending bill.**

**The Barkley Stream Pollution Bill was amended in the House to eliminate the grants-in-aid provisions and to substitute therefor provisions authorizing loans by the Reconstruction Finance Corporation for the construction of sewerage treatment works, the amendment, it is reported, being made at the request of the President.**

**Pending legislation proposes that supervision over the control of industrial health shall devolve on the United States Department of Labor.**

**The use of seals of approval without the authorization of the Federal Trade Commission will be prohibited if a pending bill is enacted.**

***State Legislation.*—Through a legislative reporting service prompt information is obtained with respect to state legislation relating to the medical profession,**

**which information is passed on if it seems of importance to state medical associations. The year 1939 was a prolific legislative year, and many proposals were considered of interest to the medical profession.**

**Five states enacted laws authorizing the formation of nonprofit corporations to operate medical service plans, and in fourteen states the organization of similar corporations was authorized to promote hospitalization plans.**

**Freedom from a venereal disease in an infectious stage as a condition to the issuance of marriage licenses is the objective sought by laws enacted in nine states during the year. In fourteen states antepartum examinations were required of pregnant women to determine the presence of syphilis.**

**The sale of certain barbiturates was limited by laws enacted in twelve states to sales on the prescription of a licensed physician, dentist or veterinarian. Eight states similarly restricted the sale of sulfanilamide, four the sale of dinitrophenol and six the sale of cinchophen.**

**Basic science laws were enacted in two states. In eight states medical licensure was limited to citizens or to applicants who have obtained first papers. In two states, osteopaths obtained enlarged privileges.**

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### Bureau of Medical Economics

The House of Delegates gave careful consideration to the National Health Program at its special session held in Chicago in September 1938. At this session a committee of physicians was named to confer and consult with proper federal representatives relative to the National Health Program. The Wagner National Health Bill, drafted to implement the National Health Program, was carefully considered at the annual session of the House of Delegates held in St. Louis in 1939. A committee of physicians was selected to present the point of view of the American Medical Association at the hearings on the Wagner National Health Bill on May 25 and 26, 1939.

The Bureau of Medical Economics assisted in the preparation of factual data to be used by the special committee of physicians in support of the position of the American Medical Association in its opposition to the proposed Wagner National Health Bill and in its advocacy of principles which it deemed to be in the interest of good public policy and the preservation and advancement of the independent private practice of medicine.

In support of the principle that the medical, health, hospital and allied activities of the federal government should be coordinated and administered by a single agency, the Bureau assembled from the Budget of the United States Government figures to show the federal expenditures for these activities. This study showed that the actual expenditures of the federal government for medical, health, hospital and allied activities for 1937 were about 7.6 per cent less than the combined budgets of the Departments of Commerce, Justice, Labor and State, minus the estimated appropriations for medical, health and allied activities for these departments. For the fiscal year ended June 30, 1938, the actual expenditures for medical, health, hospital and allied activities of the United States government, as far as they could be determined, exceeded the combined budgets of the Departments of Commerce, Justice, Labor and State, less the medical and allied activities of these departments, by 84.87 per cent.

The total appropriations estimated to be necessary for the medical, health, hospital and allied activities of the United States government for the fiscal year ended June 30, 1939, exceeded the estimated budgets of the Departments of Commerce, Justice, Labor and State, less the appropriations estimated to be needed for medical, health and allied activities by these departments by almost 33 per cent. For the fiscal year ending June 30, 1940, the appropriations estimated to be necessary for the medical, health, hospital and allied activities of the United States government were only slightly less (about 2 per cent) than the estimates for the combined budgets of the Departments of Commerce, Justice, Labor and State, less the amounts estimated to be required for the medical and allied activities of these departments.

Thus it should be clear that, measured by the amounts designated in the budgets of the United States government as appropriated for these activities, an agency for the administration of all the medical, health, hospital and allied activities of the United States government, except the medical departments of the Army and the Navy, would equal or exceed in appropriation importance the combined Departments of Commerce, Justice, Labor and State.

This complete report appears on pages 475 to 491 of part 2 of the printed Hearings on S. 1620, the Wagner National Health Bill, among the statements presented by the American Medical Association for the use of the Committee on Education and Labor of the United States Senate.

At the request of the subcommittee of the Senate Committee on Education and Labor, the Bureau also prepared a compilation of "Hospital Rates for Ward, Semi-Private and Private Room Accommodations Arranged According to Counties and States."

These data were compiled from the county summary sheets returned to the Bureau by the county medical societies that participated in the American Medical Association Study of Medical Care in the United States. This compilation appears on pages 517 to 523 of part 2 of the printed Hearings on S. 1620. The county medical societies that included these hospital rates in their reports thus materially assisted in providing information desired by a Senate subcommittee.

The Bureau also prepared for the use of the subcommittee of the Senate Committee on Education and Labor "A Criticism of the National Health Survey." This criticism appears on pages 468 to 475 of part 2 of the printed Hearings on S. 1620.

#### PUBLICATIONS OF THE BUREAU

"Factual Data on Medical Economics." This publication contains statistical and graphic presentations of medical facilities, hospitals and vital statistics, including general mortality, mortality from specific causes and maternal and infant deaths. Comparative tables and charts show revenue and expenditures and duration of incapacitating illness compiled from the reports of the operation of the German system of sickness insurance. One table shows the principal provisions of the leading national sickness insurance systems. The demand for this publication has already nearly exhausted the first edition, and work on a revision bringing the statistical material up to date is now under way.

"Organized Payments for Medical Services." There has been a large demand for descriptive material dealing with organizations which arrange various types of payments for medical services.

The introductory chapter points out that the present accelerated interest and activities in organized payments for medical care are the culmination of an evolutionary development and represent no sudden change of policy on the part of organized medicine. State and county medical society plans for the care of the indigent during the last ten years are described with samples of contracts and details of operation.

The third chapter, "Effects of Social Security Legislation," shows how medical societies have cooperated with other agencies and in many cases have furnished the form of organization through which such legislation was made effective. The various types of plans developed by the Farm Security Administration are described with copies of contracts or agreements with state and county medical societies. The results of experiments to date are summarized and evaluated.

Chapter 5 is an analysis and discussion of "Medical Care Arrangements Organized by Medical Societies." A wide variety of these arrangements, including postpayment, prepayment, unit service, cash indemnity and modified cash and unit plans as well as credit and collection bureaus, is included. Examples of medical service plans in industry, of medical and hospital benefit organizations and of union and fraternal arrangements are described. The attitude of the medical profession with regard to all these is explained and the respective merits of cash versus service insurance in the field of medicine as well as the special legislation which has been found necessary in many states are discussed. Types of organization and methods of operation of group hospitalization and its relation to state and county medical societies are explained. The activities of insurance companies in hospital insurance are treated.

The final chapter deals with "Planning an Organization of Medical Service" and seeks to supply the information needed by any organization contemplating some type of medical service plan.

"Handbook of Sickness Insurance, State Medicine and the Cost of Medical Care." This publication has been completely revised. Much of the material in previous editions which had become obsolete has been omitted and up to date material has been substituted. Publications on both sides of medical economic questions are abstracted at sufficient length to convey the essentials in the original material. The subjects covered are the incidence of illness, cost of medical care, sickness insurance, state medicine and other methods of medical care. A bibliography of some of the significant works dealing with these subjects is added.

"Index and Digest." The "Index and Digest of Official Actions of the American Medical Association" has been brought up to date with a supplement covering the proceedings of the years 1937 to 1939 inclusive. The "Digest" section includes verbatim reports from the official proceedings of the meetings of the House of Delegates covering those actions to which reference is most frequently made. The "Index and Digest" began with the year 1904 and now constitutes a comprehensive reference work on thirty-six years of activities of the governing body of the American Medical Association.

"Estimated Costs of Medical Care." Increased interest in prepayment plans for medical care has brought many requests for information on medical costs. The Bureau of Medical Economics has assembled and analyzed the available material on medical costs in a mimeographed compilation "Estimated Costs of Medical Care," in which the statistics are broken down to show detailed probable costs of various types of medical, surgical and hospital services in an average population. Sources of the material used are given for each tabulation.

"Medical Care in the United States—Demand and Supply." The state and county medical society reports for the study undertaken by the American Medical Association to determine the need and supply of medical care have been assembled and published. A preliminary report of this study was distributed to the members of the House of Delegates at the annual session of the American Medical Association held at St. Louis in 1939.

This report represents the most extensive study of this subject ever undertaken. The cooperation of 623 component county medical societies, which include 862 counties in thirty-eight states, made it possible to secure information covering a total population of 49,278,083. Only one form out of the nine used in the study was sent to physicians and dentists. The other eight forms were devised to collect information pertaining to hospitalization, health administration, nursing, pharmacy, school, college and university health services, the medical phase of welfare and relief programs and the medical services and facilities provided or arranged for by a large number of fraternal, social, industrial and community organizations. The information desired on these several phases of the supply and demand for medical care was furnished by the individuals who by reason of their experience or administrative positions were in the position to have important information concerning the extent to which needed and desired medical care is supplied in their respective communities.

It is significant that there was but little disagreement between these different sources of information in any one locality. All sources of information agreed closely on the extent of unsatisfied need for medical care and they also agreed that such unmet needs were almost always exceptional and local and confined to specific conditions. Wherever the opinion was expressed that the medical care which depended on governmental effort was unsatisfactory, especially with regard to the indigent, there was, in the majority of cases, agreement that the arrangements made by relief authorities were inadequate. Consequently a heavy burden is still borne by the physicians in private practice. About 17,000 physicians reported giving free medical care in their offices or in the patients' homes to almost 3,000,000 persons during 1937, and these physicians also contributed free care in hospitals and other institutions.

This survey has not only aroused increased interest and furnished specific information as to the demand and supply of medical care throughout a majority of states but it has also served as an incentive to the development of programs for improvement of medical care in many localities.

Partly as a check on the previously mentioned forms, an additional form, 1F, was filled in by 45,595 physicians in 461 counties in thirty-two states and the territory of Hawaii. This form asked for actual daily records of free services rendered during three different periods of the year so arranged as to give samples at times of greatest and least seasonal prevalence of disease. The data recorded on these forms correspond closely with the information given on the other form (form 1) sent to physicians concerning the amount of free service. Many of the state and county medical societies devoted considerable time and personal service in collecting the information requested and, in some cases, published the results of state and local surveys which form extremely valuable studies of local conditions.

### EXPERIMENTAL MEDICAL SERVICE PLANS

During the past seven years, many of the state and county medical societies have carried on extensive experiments in search of acceptable methods of organizing payments for medical service and adjusting the burden of medical cost to the ability to pay of varying economic classes. Never have so many, so varied or so significant projects pertaining to the distribution of medical care been developed and carried on in any other country. When, several years ago, the burden of medical care for the indigent disrupted the systems of county and township physicians, drained the resources of philanthropic organizations and became too heavy for physicians in private practice to bear, the various state and county medical societies developed almost the only equitable plans for efficiently distributing such resources as were available to provide medical care for the indigent.

During the period 1932 to 1938, between 200 and 300 county medical societies entered into agreements with relief authorities to provide medical service for the indigent. These were so organized as to protect the interests of the patients and the public in the free choice of physician and the economical administration of the always insufficient funds. A number of county medical societies have also experimented with medical service bureaus for those with low incomes. Some of these bureaus are still in operation and have been helpful to many persons in this low income group in enabling them to meet the costs of needed medical care. All these temporary plans and all those which are now in operation should be considered frankly as experiments to be expanded, restricted, altered or abolished as they prove their value in protecting the health of those served. If they are not found appropriate or desirable, they should be abandoned or modified. The medical societies which abandon such experiments stand to lose the time and money expended, but under such circumstances no political, financial or occupational vested interests are created and left behind to hamper further experiments or developments.

Out of the extensive experience with county medical society plans, a number of state medical societies are now undertaking experimental medical service plans on a statewide scale. At present, at least fourteen state medical societies have such plans in various stages of development. These states include California, Colorado, Connecticut, the District of Columbia, Massachusetts, Michigan, Missouri, New Jersey, New York, Oregon, Pennsylvania, Utah, Vermont and Washington.

In some states such arrangements have progressed little beyond endorsement by the house of delegates of the state medical society and the appointment of a committee to prepare a plan. In Connecticut, Michigan, New York, Pennsylvania and Vermont, special enabling legislation has been enacted to establish the legal basis of the plans in these states. Massachusetts is now seeking permissive legislation to form a nonprofit corporation to arrange for medical care on a cash indemnity basis. The legislature in Vermont has passed an enabling act for nonprofit medical care organizations, but as yet no such organization has been formed although plans are being considered. Several of the other state medical societies have obtained opinions from their respective insurance commissioners or other state authorities to the effect that their proposed plans are permissible under existing statutes.

In California, New York, the District of Columbia and Michigan, service under such plans is already being offered to the public or will be within the immediate future.

The Missouri Plan consists of three bureaus: 1. Medical Dental Service Bureau: a postpayment arrangement for medical, surgical and dental bills. 2. Group Hospitalization: a prepay-

ment plan for limited hospital care. 3. Central Admitting Bureau: a plan by which the low income and indigent patients will be taken care of by the medical profession in cooperation with relief authorities.

There is a wide variation among these plans such as must accompany the experimental stage in the establishment of any social institution in a nation with such widely different characteristics as the several parts of the United States. Massachusetts, New York and Utah plans provide for payment of benefits in the form of cash indemnity rather than directly in service. Most of the state plans undertake to arrange for medical care under close medical and insurance supervision. There is some diversity in the income classes included, although the majority set the upper limit at around $2,000 to $2,500 for families, with a lower income limit for individuals. Missouri classifies premiums according to three classes of incomes and according to certain variations as to the number of dependents within each income class.

In the proposed and operating medical care arrangements, prepayments vary from $1.50 to $2.50 a month for individuals, with a lower additional amount for dependents in the same family and with a maximum of about $3.50 to $5.00 for large families. Much of this variation is due to provisions which limit the services to the nature and amount that it is believed can be furnished at the rates charged. The services provided in these plans usually include home, office and hospital calls, surgical services, obstetrics included after both husband and wife have been subscribers for twelve months, x-ray and laboratory services, anesthetics and consultant services. Treatment for mental disease, alcoholism, drug addiction, tuberculosis, venereal diseases and injuries which are covered by the workmen's compensation acts is excluded.

Some plans require that the cost of certain services received by members in any one year must be paid by the subscribers before the benefits provided will become available.

The California Physicians' Service plan provides that the subscribers shall pay for the first two calls in any one illness, the Mutual Health Service of the District of Columbia requires payment of the first $6, the Michigan Medical Service provides for payment of the first $5, and the New York plans require payment for the first $10 expense in any one given year. Some state plans also place a limit on the value of the service that is given in any single year. This is usually placed sufficiently high to cover all but the most exceptional illnesses and even in these instances the total amount allowed makes a substantial contribution even though the total cost of the illnesses may not be completely covered. In Michigan the maximum coverage for an individual subscriber in any one subscription year is $325, with the family limit set at $875.

All these plans vest control in the medical profession, although several provide for lay representation in their governing bodies. In all cases, arrangements are made to provide that medical standards shall be under professional control. The state medical societies have themselves provided, through appropriations from their funds and the gratuitous services of their officers or committees, for the preliminary expenses of organization.

These state and county medical society arrangements for the distribution of medical services represent an effort on the part of the organized medical profession to make available the medical care which subscribers may need and desire at rates they can afford to pay. In some areas there is apparently little demand for medical services on a group basis.

The information gained from these experiments and obtainable from statistical studies of morbidity and the costs of medical care is still insufficient to afford dependable actuarial figures on which prepayment arrangements for the distribution of medical care can be organized and conducted with positive assurance of success. One reason for this uncertainty is the failure of most previous prepayment plans and especially systems of compulsory sickness insurance to place such safeguards around the quality of the services provided as to insure the maintenance of high standards of medical care. Neither has any way yet been found to predict with any reasonable accuracy the amount of service that will be demanded by subscribers to these plans. It is now too early to evaluate these developments in every detail. As experience is gained it may be desirable to add to the Ten Principles adopted by the House of Delegates in 1934 for the guidance of medical societies in the organization and conduct of such activities.

### GROUP HOSPITALIZATION

There has been a continued growth of nonprofit group hospitalization during 1939. At the present time the Bureau has records of 108 such groups in operation in thirty-five states and the District of Columbia, with an estimated enrolment of over 5 million persons. Of these, fifty-six are organized and operated according to the principles established by the Commission on Hospital Service of the American Hospital Association and are permitted to exhibit the American Hospital Association's emblem of approval, the blue cross. Ten of these plans are statewide in scope, such as the Michigan hospitalization plan, and have the approval in principle of the state medical societies in their respective states. A majority have some degree of approval and active cooperation of the local county medical societies.

The House of Delegates of the American Medical Association adopted at its annual session in 1937 ten principles for the guidance of physicians and hospital administrators in the organization and operation of group hospitalization plans. These principles were revised and reaffirmed by the House of Delegates at the regular session in 1938. At the special session of the House of Delegates in September 1938 approval was given to the principle of hospital service insurance, provided these plans confined themselves to the provision of hospital facilities and did not include any type of medical care. No approval, endorsement or recommendation has been given to individual group hospitalization plans by the American Medical Association, although a few such plans may conform to the principles adopted by the House of Delegates.

In Michigan and California, where prepayment plans for medical service for the low income group have been developed by the state medical associations, the contracts offered by the Michigan Medical Service and the California Physicians' Service and the group hospitalization plans in these states may be mutually supplementary. A subscriber to one organization is encouraged to subscribe to the other and consequently obtain full coverage for hospital, surgical and medical services. Since practically all medical services are provided in the medical service agreements, there is no need for hospital service contracts to include any medical service.

The need for greater attention to the limits within which group hospitalization plans should be organized and operated has been more clearly indicated in the last year by changes in organization and administration made by some hospital service associations. At a meeting of the board of directors of the Associated Hospital Service of New York held in October 1939 the board voted to increase its membership to include an additional five physicians. Earlier the Associated Hospital Service of New York had revised its subscribers' contracts to embody several new limitations and some liberalization of benefits. About 57,000 contracts with subscribers who had enrolled on an individual basis were terminated. These subscribers can reenroll only through organized groups. The Associated Hospital Service stated that a study of its experience indicated that a proper distribution of risk had not been maintained in the individual enrolment of subscribers.

The Associated Hospital Service of New York received permission from the state department of social welfare to reduce by 25 per cent its payments to member hospitals for services rendered by them to subscribers during the months of April, May and June, and later this was extended to cover July, August and September. It was stated that it was hoped to return to the original per diem payment by Jan. 1, 1940. These adjustments which have been made in the Hospital Service Plan demonstrate the experimental nature of such plans. Further experience may bring about additional changes that will contribute to the establishment and operation of other principles which are necessary to the sound conduct of nonprofit voluntary group hospitalization plans.

There has been increased inclination on the part of several group hospital service corporations to include ward service in their prepayment plans. The Cleveland Hospital Service Association, which has since its organization in 1934 offered ward service at 60 cents a month and a semiprivate room at 75 cents a

month, had as of Jan. 31, 1940, 40,631 ward contracts and 114,439 semiprivate room contracts. The Michigan Society for Group Hospitalization, organized on a statewide basis in 1938, also offers a ward service contract for 60 cents a month and a semiprivate room contract at 75 cents a month.

The inclusion in group hospitalization plans of ward services at lower rates creates new problems with regard to the medical services required by these ward patient subscribers. A great deal depends on the definition of ward service used in these plans. The provisions in the nine hospital service plans which offer ward service contracts differ from those which offer semiprivate room service chiefly in the rates and the accommodations the subscriber may receive while in a hospital. This newer development on the part of group hospitalization organizations represents a further deviation from the principles pertaining to group hospitalization adopted by the House of Delegates and should be given serious consideration as a possible move on the part of the group hospitalization organizations to provide their subscribers with general medical services.

### COMMERCIAL INSURANCE COMPANIES

There has been a gradual increase in recent years in the development of group insurance offered by established commercial insurance companies. A number of these insurance companies offer either a complete or a limited insurance program to employers for their employees, or directly to employed groups. A complete group insurance program may include life, accident and health, accidental death and dismemberment, hospitalization and surgical expenses, and in some cases medical expenses; a limited program may include any combination of the different types of group coverage. The insurance companies which offer group insurance are prepared to develop a plan to fit the demands of widely differing groups. The group policies offered by the more thoroughly established stock or mutual insurance companies are cash contracts which provide that the benefits are payable directly to the insured.

The hospital expense policies offered by insurance companies may provide thirty-one or seventy or more days of hospital care for any one disability during an insurance year and the premium rates are computed on a basic rate per dollar of daily benefit. The basic rate varies according to the sex, age and race of the group to be covered. The hospital expense policy also provides cash reimbursement for diagnostic laboratory services and the use of the operating room up to maximum of five times the daily benefit. In most states there is no upper age limit for group hospital expense insurance offered by insurance companies. The group must consist of at least fifty persons, in which case all must participate, but in groups of more than fifty at least 75 per cent of the employees must participate.

Surgical benefits are usually written only in connection with hospital expense insurance. Hospital and surgical benefits are payable only if the person is confined in a legally constituted hospital under the care of a licensed physician. Benefits are not provided for injuries or illnesses for which medical care is provided in workmen's compensation laws.

Accident and health insurance benefits offered by the legal reserve insurance companies may vary considerably, although the basic rate for the first year is identical for all conference companies. The group policies usually provide thirteen weeks of benefit for any one disability. The individual monthly premiums are based on weekly pay and are loaded according to the percentage of females in the group. The weekly benefits that will be provided are usually graduated according to the weekly or monthly pay of the individuals in the insured group. Benefits are paid in cash directly to the insured.

Newly organized mutual insurance companies or benefit associations sometimes attempt to enter the field of accident and health or hospitalization insurance by a low rate accident and health or hospitalization contract which provides that benefits will be paid in services or that the charges for medical services will be paid directly to physicians or hospitals. These contracts are usually written in such a manner that the insurance company or the benefit association will control the type and amount of service the policyholder may receive. Such control is necessary from the financial standpoint of the insurance company since the benefits are not usually completely specified in the contract. Sound actuarial principles require that premium rates be sufficient to cover the benefits offered; but, if the benefits are not definitely stated, some control must be maintained over the service provided.

Assessment insurance companies in this field attempt to meet this same problem through an assessment provision which enables them to collect additional premiums if the original rates are not high enough to cover the expenses and benefits.

Group accident and health and group hospitalization insurance, whether issued by newly organized nonprofit organizations or by established commercial insurance companies, offer another means by which persons in employed groups who desire, and feel able to afford such protection, can secure it voluntarily. The attitude of the medical profession toward methods of arranging for payment of medical service is clearly and concisely stated in the following paragraph, which is part of a special report adopted by the House of Delegates of the American Medical Association at its regular meeting in 1935:

> There is nothing inherently good or bad, from a medical point of view, in different methods of collection. Insurance, taxation, budgeting, advance financing and all other methods are nothing more than tools with which to conduct an economic transaction. They remain nothing more than this and can be discussed impartially if they are kept strictly within the economic sphere. The problem is to select the best method for every purpose. The chief thing to keep in mind is that all forms of collection should be isolated from any control of service and be kept exclusively in the economic field.

### HOSPITAL AND MEDICAL EXPENSE INSURANCE FOR INDIVIDUALS

In addition to the legal reserve companies which offer group hospital and surgical expense insurance policies, there are a number of well established insurance companies which offer hospital and medical expense insurance to individuals or families not enrolled in groups. These policies provide benefits in the form of reimbursement for designated medical services and hospital care. Some of the companies also provide surgical contracts which provide cash reimbursements for specified surgical services. The rates for the hospital and surgical benefits contracts sold to individuals or families who do not enroll as members of a group are considerably higher than the group contract rates, depending on the benefits desired. This type of policy meets at least to some extent the needs of those persons who are not eligible under group coverage.

Already some competition has developed between commercial insurance companies which offer group insurance contracts and newly formed nonprofit organizations which offer contracts for either medical services or group hospitalization. At present the field seems to be sufficiently large for both types of organizations, but it will require time and careful study of the progress methods of administration and experience of each type of coverage to determine which will ultimately be of the greatest service to the people.

It must be remembered in connection with these newer insurance arrangements that they are voluntary methods of arranging in advance for financial transactions that may be necessary in the lives of very many persons. Every effort should be made to gather accurate and reliable information on this voluntary movement, looking toward such improvements as experience indicates are necessary in order that a sound pattern of medical and hospital care may be developed in which quality of service will be maintained according to professional standards. These arrangements, however, cannot supplant or replace private medical care.

### PROFESSIONALLY CONTROLLED CREDIT AND COLLECTION AGENCIES

Collecting delinquent medical accounts is an important problem in the practice of the majority of physicians. The procedure followed by many commercial credit and collection agencies has proved unsatisfactory to physicians in so many instances that the physicians in many localities have established their own credit and collection agencies or, more frequently, have established effective supervision of the procedure followed by a privately owned agency which collects their accounts.

In 1938 the Bureau published a report, "Collecting Medical Fees," which outlined and discussed the various systems used by commercial collection agencies. This report carefully described some of the methods that might be useful to physi-

cians in determining the value and reliability of the services offered by collection agencies and gave particular emphasis to practices which tend to defraud the physician or which allow the collection agency to employ undesirable procedures in dealing with patients.

During 1938, 460 copies of the report "Collecting Medical Fees" were distributed to medical societies, physicians' collection agencies, libraries and others interested in the collection of retail medical accounts. In the past year 420 copies were distributed, making a total of 880 copies sent out since this report was published in serial form in THE JOURNAL in the early part of 1938.

Based on the data collected in 1937 and 1938 for the report "Collecting Medical Fees," thirty-three professionally controlled credit and collection bureaus were in operation at the beginning of 1938. The report "Collecting Medical Fees" contained a general description of the organization and operation of the professionally controlled bureaus, and in addition a detailed classification according to the method by which the medical profession established control over collection methods employed in these bureaus. The report further discussed these professionally controlled bureaus with regard to finances, other services offered and the experience of both the physicians and the patients in their relations with these bureaus. One of the objectives of the professionally controlled collection bureaus appears to be the development of collection methods that are fair to both the physician and the patient.

During the past year the Bureau of Medical Economics has attempted to bring its records on the number and operation of professionally controlled collection bureaus up to date through correspondence with all the bureaus on which a name record has been obtained through such sources as state and county medical societies or from medical journals and bulletins. At the present time information has been collected from sixty-three professionally controlled bureaus. Of this total, which includes the thirty-three in operation in 1938, ten have been discontinued. The remaining fifty-three may be classified as to form of organization into the three broad classifications which were established in the report "Collecting Medical Fees":

> 1. The county medical society directly establishes and operates the bureau. The board of directors is elected by and is representative of the county medical society.

According to the information obtained in 1938 there were fourteen bureaus of this type. Available records indicate that in 1939 there were fifteen bureaus of this type in operation.

> 2. Physicians who are members of the county medical society organize a bureau and elect the board of directors. The county medical society may also appoint a committee to supervise the activities of the bureau and act as arbitrator between physicians and the bureau.

According to the information obtained in 1938 there were fourteen bureaus of this type. Available records indicate that there were twenty-seven bureaus of this type in operation in 1939.

> 3. The county medical society appoints a committee to act in an advisory capacity with the governing body of a privately organized bureau.

The information obtained in 1938 indicates that there were five bureaus of this type. Available records indicate also that there were eleven bureaus of this type in operation in 1939.

Practically all the professionally controlled collection bureaus have a credit rating service as well as a collection service. In addition to these functions a bureau sometimes offers individual physicians valuable assistance in developing proper bookkeeping systems. The bureaus may also cooperate with physicians and patients in working out instalment payment plans, according to the patient's ability to pay. In such cases the bureau may provide the physician with pertinent data on the patient's financial status, so that the physician and patient determine the actual amount of the periodic postpayments to be made.

### FINANCING ARRANGEMENTS FOR MEDICAL CARE

In the last year there seems to have been increased interest in plans for financing medical accounts. Professionally controlled bureaus of this type have developed arrangements, usually with the cooperation of their local banks, to discount physician's accounts and to obtain an agreement from the patients to make a small monthly payment for a given period. The financing charges are discounted from the amount paid the physician, so that no additional charges are passed on to the patient. Such an arrangement may be helpful if a physician is in need of cash, but it should be remembered that the physician is paying for the privilege of receiving immediate payment of his bill at the time it is discounted through the bureau.

Commercial companies which offer to finance medical accounts are also continuing their activity in this field. A detailed discussion of their financing methods is contained in the report "Collecting Medical Fees" and is available to any physician desiring such information. Finance plans for medical accounts are similar to other financing arrangements. The finance company does not appear to bear any risk and collects interest and a service charge for its services. The physician who desires to use such financing services is required to give adequate security for any advance or payment he receives through discounting a bill with the finance company. In addition, the physician is, in many instances, ultimately responsible for the face value of the bill although he received an amount equal only to the face value of the account less interest and service charges.

Such finance plans do not lower the cost of medical care but, on the contrary, offer abundant opportunity to pass on to the patient the interest and service costs, thus materially increasing the medical costs to those persons who are often least able to pay. Physicians should carefully investigate finance plans before entering into contracts for discounting medical accounts.

### MEDICAL FEE SCHEDULES

The Bureau of Medical Economics, since it was established in 1931, has made an effort to collect the fee schedules used by members of county medical societies. During 1934 the Bureau computed minimum and maximum average fees throughout the United States for 530 items contained in 384 county medical society schedules. This list of 530 items with average fees was kept in the files of the Bureau where it could be referred to on questions involving medical fees, but at no time has any fee schedule been recommended for adoption by county medical societies.

In November 1937 an effort was made to secure a more complete and up to date record of county fee schedules. A letter was sent to the secretary of every county medical society in the United States requesting a copy of the fee schedule that had been adopted or was being used by the county society at that time.

At the annual meeting of the House of Delegates of the American Medical Association in San Francisco in June 1938 the following Resolution on Fee Schedules was adopted:

> WHEREAS, State and county medical societies have from time to time, on their own initative or at the request of others claiming a valid or social interest in the cost of medical services to a particular group, established so-called fee bills on which the contracting persons or groups agree to base charges; and
>
> WHEREAS, Such fee bills often set up without due regard to the equitable interest of the various groups concerned furnish an implement through which exploitation is practiced and abuses encouraged; and
>
> WHEREAS, The necessity for or advisability of such schedules has never been considered by the House; and
>
> WHEREAS, Controversy over the application of such schedules is rife, serving to divert the attention of the contracting persons from the central fact—namely, the quality of medical care—thus reflecting unfavorably on the profession and lending comfort to those critics who charge it with the adoption of trade union methods; and
>
> WHEREAS, It has been the unwritten rule, established by a long line of ethical practitioners, both past and present, to adapt charges for medical services to the ability of his patient to pay, untrammeled by fixed community schedules; therefore be it
>
> *Resolved*, That this device, appearing with increasing frequency, be examined by an appropriate agency of the American Medical Association to the end that the Association may declare itself on certain controversial points, among which are:
>
> (*a*) The advisability of or necessity for fee schedules in the public interest.
>
> (*b*) Their ethical or unethical qualities.
>
> (*c*) Necessity for certain fixed principles to guide constituent units of the Association when and if it is deemed, in the public interest, necessary to adopt such a device, and
>
> (*d*) Whether such schedules, approved by constituent units of the Association, should or should not provide for elasticity so as to permit of adaptation to wage levels, specialized medical service, variations based on differential costs as between urban, semiurban and rural practice and other related considerations.

In June 1938 the Bureau began a compilation and tabulation of the figures recorded in the county medical societies' fee schedules. At first it was necessary to make a composite list of items included in the 559 county fee schedules. The nomenclature and classifications in these schedules varied greatly. No two schedules were completely alike. Many of the counties reported a very short schedule, a list of the most common services performed by the general practitioner in his daily practice. Others had a very elaborate and detailed list of more than 300 items including many unusual and seldom used tests and operations. In the final list, which includes a total of 606 items, the medical and surgical services are subdivided under ten main headings and twenty-three subheadings.

A list of these fees which were reported by the largest number of county medical societies comprises only forty-seven items. This list indicates the type of services on which the majority of the county medical societies considered established fees to be practicable. Except for surgical procedures, complement fixation tests for syphilis and postmortem examinations, the list includes only services which the general practitioner might be expected to perform every day under ordinary conditions. The fact that so many county medical society schedules do not include established fees for the remaining 559 items, which make up the composite list, indicates the difficulty of establishing in advance an evaluation in dollars of the amount of time, skill and responsibility required for a large number of medical procedures.

*Compilation of Averages.*—The next phase of study, which was completed in 1939, was to compile average minimum fees (means, medians and modes) for each state for every item on which a sufficient number of fees from which to compute such averages was reported. Averages of the minimum fees for the United States have been computed for all the 606 items. These average fees are now available as a basis for a further study on the question of the necessity or desirability of established medical fee schedules.

An equitable fee depends not only on the professional skill required and the time consumed but also on costs of living and on the economic status of the majority of the people in a given locality. Medical fees also show considerable variation in rural areas as compared to industrial centers. Consequently, average fees for the entire United States would be useful to any particular county society only as a comparison of the difference between the local medical fees and the average fees for the United States. Average fees for an entire state might be a more practical guide for a county medical society within the particular state if the average fees were derived from figures that are representative of the actual amounts usually charged for medical services in that state.

*Use of Average Fees.*—These average figures might also be useful as a guide in determining equitable fees for medical service under various medical care plans for special economic groups such as the indigent, Farm Security Administration clients and the low income group. During the last two years there have been numerous developments in prepayment medical service plans by state medical societies for the low income group. The premium rates and benefits under such plans must be based on some schedule of fees which will be used as a guide in making payments to physicians under these plans. The Bureau of Medical Economics is continually receiving requests for copies of average fees from state medical societies to be used in preparing prepayment medical service plans. In addition, requests have been received from more than twenty-five county medical societies for copies of a schedule of average fees to be used for the purpose of establishing or revising fee schedules. Average fees compiled from existing county medical society fee schedules are not necessarily representative fees for a given service in a particular locality. The average simply stands for the numerous individual items reported for a given service in the large number of county fee schedules.

The data on fee schedules now on file in the Bureau represents the most complete compilation of medical fees available. The complexity and large number of fees for any given service makes it unpractical to use the entire 606 item schedule in actual practice either under a prepayment medical plan or in private practice. The charge made for medical services must be determined ultimately by the physician rendering the service or in a prepayment plan by a representative committee of the physicians who are to provide service under the plan and who are familiar with local conditions.

If it is deemed advisable to make the average fees compiled by the Bureau available to all organizations or persons interested in this subject, it must be made clear that such average fees are not ultimate or final evaluations of charges for medical services. Experience of physicians with regard to established medical fees indicate that established schedules of fees may become so inflexible that it then becomes difficult to make proper adjustments to assure continued improvement in the quality of medical service.

In whatever way it is determined that the Bureau's compilation of medical fees is to be used, it is imperative that under all circumstances it must be thoroughly understood that the American Medical Association never has and does not now undertake to establish medical fees. The figures now available merely represent averages derived from fee schedules reported by state and county medical societies.

## Summary

***The Wagner National Health Bill.*—The Bureau of Medical Economics prepared factual data which was used by the special committee of physicians of the American Medical Association at the hearings on the Wagner National Health Bill. It also prepared special material requested by the Senate subcommittee.**

***Publications of the Bureau.*—During 1939 the Bureau prepared five new publications, completely revised one old publication and brought up to date the Index and Digest of the Official Actions of the House of Delegates.**

***State Medical Society Arrangements for the Distribution of Medical Care.*—At present at least fourteen state medical societies have statewide arrangements in various stages of development or operation. It is now too early to evaluate these developments in every detail. As experience is gained, it may be desirable to add to the Ten Principles adopted by the House of Delegates in 1934 for the guidance of medical societies in the organization and conduct of such activities. It has become apparent however, that in some sections there appears to be little demand for these organized arrangements for the distribution of medical services.**

***Group Hospitalization.*—At the close of 1939 there were 108 group hospitalization organizations in operation in thirty-five states and in the District of Columbia, with an estimated enrolment of over 5 million persons. Some hospitalization groups continue to provide their members with special medical services contrary to the principles adopted by the House of Delegates in 1937, and several group hospitalization organizations are now offering ward service contracts at lower rates than in the semiprivate room accommodations. This newer development on the part of group hospitalization organizations represents a further deviation from the principles pertaining to group hospitalization adopted by the House of Delegates and should be given serious consideration as a possible movement on the part of these hospitalization groups to provide their subscribers with general medical services.**

***Commercial Insurance Companies.*—In recent years there has been a gradual increase in the development of group insurance offered by established commercial insurance companies. These companies offer a flexibility of programs and pay benefits in cash to the insured individuals. Some newly organized mutual insurance companies or benefit associations have attempted to enter this field with low rate contracts which provide that benefits will be paid in service or that the charges for medical or hospital services will be paid directly to the physician or hospital rendering the services. The accident and health, and hospitalization insurance field has also been entered by some assessment insurance companies which attempt to provide benefits at very low premium rates for the privilege of collecting assessments should the original rates prove inadequate. In addition to insurance companies which offer group contracts, a**

number of well established insurance companies now offer medical and hospital insurance coverage to individuals or families not enrolled in groups. Every effort should be made to gather accurate and reliable information on this voluntary movement looking toward such improvements as experience indicates are necessary in order to maintain and advance the quality of medical and hospital services.

***Professionally Controlled Credit and Collection Agencies.***—Based on the data collected in 1937 and 1938 there were thirty-three professionally controlled credit and collection bureaus at the beginning of 1938. At the present time information has been collected from sixty-three professionally controlled credit and collection bureaus. Of this total, ten discontinued operation in 1939. The chief advantage of the professionally owned bureaus seems to be that they enable the physicians who use them to maintain some control over the accounts under collection and are so organized that undesirable procedures in dealing with patients can be avoided.

***Financing Arrangements for Medical Care.***—Corporations organized for the purpose of extending financing privileges for general or special purposes seem to have increased their interest in medical financing in the past year. These finance companies or corporations seem to have perfected plans whereby they suffer very little risk of loss on the accounts handled. These finance plans do not lower the cost of medical care but on the contrary offer opportunity to pass on to the patient interest and service costs, which would thus materially increase the medical costs to those persons who are often least able to pay.

***Medical Fee Schedules.***—The Bureau of Medical Economics since it was established in 1931 has assembled fee schedules from all parts of the United States. In 1934 the Bureau computed average fees from a composite schedule of 530 items reported by 384 county medical societies. In 1937 and 1938 the Bureau renewed its efforts to secure additional county medical society fee schedules. The compilation of median, mean and mode fees completed in 1939 was derived from a composite list of 606 items reported in 559 county medical society fee schedules. This compilation, it is believed, represents the most complete compilation of medical fees available.

If it is deemed advisable to make the average fees compiled by the Bureau available to all organizations or persons interested in this subject, it must be made clear that such average fees are not ultimate or final evaluations of charges for medical services. Experiences of physicians with regard to established medical fees indicate that established schedules of fees may become so inflexible that it then becomes difficult to make proper adjustments to assure continued improvement in the quality of medical service.

In whatever way it is determined that the Bureau's compilation of medical fees is to be used, it is imperative that under all circumstances it must be thoroughly understood that the American Medical Association does not undertake to establish medical fees. The figures now available merely represent averages derived from fee schedules reported by state and county medical societies.

## Bureau of Investigation

The Bureau of Investigation continues to fill a real need in supplying information concerning "patent medicines," charlatans and frauds to physicians, laymen, government agencies, better business bureaus, business corporations, newspapers, radio stations and high school and college students who are making special studies of such items.

The new Food, Drug and Cosmetic Act and the Wheeler-Lea Amendment to the Federal Trade Commission Act have increased the powers and extended the duties of certain agencies of the federal government and have brought about a more intensive cooperative relationship between the Bureau of Investigation and these governmental agencies.

The fact that many "patent medicine" labels now contain a list of the active ingredients in accordance with the new Food, Drug and Cosmetic Act has not affected the number of inquiries received by the Bureau with regard to such items.

Analysis of the inquiries received by the Bureau indicates that about 40 per cent of them were received from physicians, that another 40 per cent were received from laymen not classified otherwise and that about 12 per cent came from students. The remainder were about equally divided among Better Business Bureaus, government agencies, newspapers, magazines and radio stations.

The principal subjects of the inquiries received by the Bureau pertain to "patent medicines," including "epilepsy cures" and "cancer cures," nostrums advertised for the treatment of asthma, cosmetics, "advertising doctors," food products for which claims of therapeutic value are made, coal tar drugs that are widely advertised and electrical contrivances most of which are more or less similar to the Abrams machines. The wide variety of subjects inquired about is indicated by the fact that twelve leading subjects represent only 15 per cent of all inquiries received.

### PUBLICATIONS AND FIELD WORK

During the year covered by this report the Bureau of Investigation prepared thirty-one articles for publication in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, a number of which were written by Dr. Arthur J. Cramp, formerly Director of the Bureau. Abstracts of 248 Notices of Judgment issued by federal agencies were prepared for THE JOURNAL. The usual demand for booklets and pamphlets issued by the Bureau has continued. Slides, posters and film strips, heretofore available for use in connection with lectures and exhibits, were all discontinued during the year in order that they might be revised. The work of revision is nearing completion.

A part of the work of the Bureau was illustrated in a special exhibit at the annual session of the Association in St. Louis, and material has been prepared for use in the loan exhibits available through the Bureau of Exhibits.

The Director of the Bureau has appeared before a number of lay audiences under the sponsorship of medical societies, of local women's auxiliaries and of a number of other groups.

## Bureau of Exhibits

The activities of the Bureau of Exhibits in 1939 were largely concerned with the Scientific Exhibit at the St. Louis session, with exhibits for medical societies and other organizations and for the New York World's Fair and the Golden Gate International Exposition, with the Association's exhibit in the Museum of Science and Industry in Chicago and with motion pictures made available for the use of medical and other scientific groups.

### THE SCIENTIFIC EXHIBIT

The Scientific Exhibit at the St. Louis session contained much excellent material of great educational value. Each of the exhibits was demonstrated by qualified personnel. There were 222 exhibits shown on the main floor of the Auditorium and in the adjoining corridors, while in the sections of parquet seats surrounding the main floor six groups of motion pictures were being presented constantly.

Fifteen sections of the Scientific Assembly were represented by groups of exhibits dealing with the various specialties. Many of the exhibits pertained to subjects discussed in papers read before sections of the Scientific Assembly, thus making it possible for physicians in attendance to study these subjects in detail after hearing the papers and discussions. Representatives appointed by the various sections rendered excellent service in securing noteworthy exhibits.

The exhibit symposium on heart disease, presented in cooperation with the American Heart Association, was a feature that attracted much attention. Two special exhibits sponsored by the Board of Trustees dealt with fractures and anesthesia. The fracture exhibit, prepared by a special committee with Dr. Kellogg Speed, of Chicago, as chairman, has long been a regular feature of the annual session. The anesthesia exhibit was presented for the third year under a committee of which Dr. Ralph M. Waters, of Madison, Wis., was chairman.

The group of educational exhibits, consisting of material from national and state organizations and from governmental institutions, has been steadily increasing in size and improving in quality. At St. Louis there was an exhibit symposium on graduate medical education, assembled with the cooperation of the Council on Medical Education and Hospitals and consisting largely of material presented by constituent state and component county medical societies.

Awards and citations were given to twenty-four exhibits. The Committee on Awards, of which Dr. Ludvig Hektoen was chairman, labored long and conscientiously in considering the relative merits of the mass of excellent material presented.

### ASSOCIATION EXHIBITS

Association exhibits include those exhibits which depict some of the work of the Association and matters in which various departments of the Association are interested. There are thirty-nine such exhibits on the list for loan purposes. During the year two new exhibits were added to this list, nine reconditioned or brought up to date with new material and six eliminated because they were out of date or worn out. Ninety-two Association exhibits were lent in 1939 for showing in twenty-six states and in Canada. In several instances the exhibits were retained over a period of weeks so that they might be shown in different localities. More than one subject was included in some shipments, making the total individual showings during the year nearly 200. The average showing lasted from three or four days to a week, but some were extended to a month or more. Many requests for material were received that could not be complied with because of conflicting dates. Thirty-one shipments were made to medical societies and other scientific organizations, while sixty-one were made to expositions and fairs for the public.

Requests for material from groups other than medical societies and from scientific organizations of known repute were received through component county or constituent state medical societies. When such requests came directly to the American Medical Association, the approval of the local societies was obtained before the material was shipped.

Responsibility for installation and demonstration of the exhibits ordinarily has been borne by the organization borrowing the material. It has been necessary, therefore, to have the exhibits in such shape that they could be easily installed and yet present an acceptable appearance. On twenty occasions a representative of the Bureau installed and demonstrated exhibits.

### NEW YORK WORLD'S FAIR

The New York World's Fair opened its 1939 season on April 30 and closed on Oct. 31, 1939, a total of 185 days. The total paid attendance at the fair was 25,811,733. The attendance at the booth of the American Medical Association was approximately 854,515. The daily average was 4,619, but on ten occasions the daily attendance exceeded 10,000. The length of time an individual stayed in the booth varied from a few minutes to half an hour or more. An attendant was on duty constantly at the American Medical Association booth and answered questions as far as was possible, but the large crowds made it impossible to demonstrate the exhibit fully. A total of 2,093 persons filled out the question blanks, the questions being answered by mail.

The subject of the American Medical Association exhibit assigned by the fair was "Medical Education." An advisory committee consisting of the members of the Council on Medical Education and Hospitals, together with Dr. Arthur W. Booth and Dr. Thomas G. Hull, was appointed to assist with the preparation of the exhibit. The exhibit was located in the Hall of Medicine and Public Health and occupied about 600 square feet.

### GOLDEN GATE INTERNATIONAL EXPOSITION

The Golden Gate International Exposition opened on Feb. 18 and closed on Oct. 29, 1939, a total of 254 days. The total paid attendance at this fair was 10,496,203. Nearly 1,000,000 people visited the Association's exhibit. Attendants were constantly on duty. As at New York, question blanks were available for the use of visitors and 1,164 persons submitted inquiries, which were answered by mail.

The subject of the American Medical Association exhibit was "Medical Education," to which were added certain other features such as "Contributions of Medicine to Public Welfare" and "Contributions of the American Medical Association." The exhibit was located in the Hall of Science and occupied about 1,200 square feet.

An exhibit on "Food Fads" was made available by the Bureau and was shown in the Foods Building for a period of three months.

### MUSEUM OF SCIENCE AND INDUSTRY, OF CHICAGO

At the close of A Century of Progress in Chicago in 1934 the exhibit of the American Medical Association was turned over to the Museum of Science and Industry. In 1939 the museum installed a medical section in temporary quarters, but near the close of the year permanent quarters for the medical section were developed and a part of the Association's exhibit was installed in a room on the first floor and another part on the second floor. Material from the exhibit at the Golden Gate International Exposition will be added to the Association's exhibit at the Museum of Science and Industry. During the year 1939 there were approximately half a million visitors in the one wing of the museum that was open to the public.

### MOTION PICTURES

The demand for motion pictures is insistent and continuous and has become a major problem for the Bureau. Hundreds of letters inquiring about sources of pictures on particular subjects besides numerous requests for films from the American Medical Association loan collection are received. During the year seven new subjects were added to the list of available films, fifteen old subjects retained and one discontinued. There are now twenty-two subjects in the loan collection, only three of which are suitable for lay audiences. Two pictures are available in 35 mm. size only, and the demand for them is very small. Three pictures are accompanied by sound, the rest being silent films.

There were 368 bookings of motion pictures during the year in thirty-two states and Canada. In some instances the pictures were shown before several different groups, making 567 showings in all, an average of eleven showings a week. These pictures were displayed to various groups varying in number from six or eight students to 1,000 or more persons, the total for the year being about 45,000.

### Summary

**The Scientific Exhibit at the St. Louis session included 222 exhibits and six groups of motion pictures. There were special exhibits on fractures and anesthesia and exhibit symposiums on heart disease and graduate medical education. Awards and citations were made to twenty-four exhibits.**

**Association exhibits, dealing with the activities of the Association, now number thirty-nine. More than 200 exhibits were shown in twenty-six states and Canada.**

**The exhibit of the American Medical Association at the New York World's Fair attracted nearly a million visitors, more than 2,000 of whom sent in questions which were answered by mail. Besides the main exhibit on "Medical Education" the Association contributed to the fair a series of historical murals and an exhibit on Hygeia, the Health Magazine.**

**The Golden Gate International Exposition at San Francisco included an exhibit from the Association and was also visited by nearly a million people, of whom more than 1,100 sent in questions which were answered by mail. Besides the main exhibit on "Medical Education," the Association contributed an exhibit on "Food Fads" for a period of three months.**

**Exhibit material from the Association's exhibit at A Century of Progress, held in Chicago in 1933 and 1934, has been turned over to the Museum of Science and Industry in Chicago and installed in the medical section of the museum. Material from the exhibit at the Golden Gate International Exposition will be added.**

**There were 567 showings of motion pictures in thirty-two states and Canada before audiences totaling about 45,000.**

### Miscellaneous Matters

Each year the Board of Trustees is called on to consider a great many matters, this year recorded in nearly 500 pages of minutes, which include some that are not discussed in its official report in order to avoid the presentation of a report that would be too voluminous for detailed consideration by reference committees of the House of Delegates. In dealing with all such matters, the Board of Trustees proceeds in strict accordance with the policies established by the House of Delegates.

Respectfully submitted.

ARTHUR W. BOOTH, Chairman.
AUSTIN A. HAYDEN, Secretary.
JAMES R. BLOSS.
THOMAS S. CULLEN.
RALPH A. FENTON.
ELMER L. HENDERSON.
ROGER I. LEE.
R. L. SENSENICH.
CHARLES B. WRIGHT.

## ADDENDA TO REPORT OF BOARD OF TRUSTEES

### Report of the Committee on Scientific Research for 1939

The committee has continued to support by small grants promising individual research in various fields of medical interest. During the year seventy-six applications have been considered and thirty-seven grants have been made. In all cases the money has been turned over to the financial officer of the institution in which the grantee works, with the understanding that it would be subject to requisitions by the grantee and that an accurate account of the expenses would be kept. Results of work under thirty-five grants have been published or are in course of publication. The results under twenty-three grants prior to 1939 are being prepared for publication; in the case of forty-five grants prior to 1939 active work is still in progress, but in several cases reports on results have been published. During the year unexpended balances from grants amounting to $556.81 have been refunded (see financial statement for 1939).

*Financial Statement for 1939*

| | | |
|---|---|---|
| Balance, Jan. 1, 1939 | | $ 1,067.87 |
| Appropriation for 1939 | | 13,750.00 |
| Refund, grant 397 | | 80.05 |
| Refund, grant 458 | | .15 |
| Refund, grant 465 | 194.03 | |
| Refund, grant 466 | 104.78 | |
| Refund, grant 525 | 177.80 | |
| | | $15,374.68 |

The committee ventures to recommend that the same appropriation be made for 1940 as for 1939; namely, $12,500 for grants in aid of medical research and $1,200 for expenses of the committee.

The financial statement for 1939 is presented; also brief accounts of grants work on which has been completed during the year and of grants pending at the end of 1938, as well as a list of grants made in 1939.

Respectfully submitted.

COMMITTEE ON SCIENTIFIC RESEARCH OF THE AMERICAN MEDICAL ASSOCIATION.
LUDVIG HEKTOEN, Chicago, Chairman.
Term expires, 1941.
N. W. JONES, Portland, Ore.
Term expires, 1944.
MARTIN H. FISCHER, Cincinnati.
Term expires, 1940.
C. C. BASS, New Orleans.
Term expires, 1942.
JOHN J. MORTON, Rochester, N. Y.
Term expires, 1943.

*GRANTS AND EXPENSES PAID IN 1938*

| | |
|---|---|
| Grant 529, Helen F. Tucker | $ 175.00 |
| Grant 530, George Herrman | 200.00 |
| Grant 531, L. R. Dragstedt and G. M. Dack | 600.00 |
| Grant 532, Walter Schiller | 200.00 |
| Grant 533, Hardy A. Kemp and W. M. Fisher | 300.00 |
| Grant 534, Martin Silberberg | 600.00 |
| Grant 535, W. R. Tweedy | 200.00 |
| Grant 536, Catharine Macfarlane | 1,900.00 |
| Grant 537, Herman Kabat | 400.00 |
| Grant 538, Eben J. Carey | 750.00 |
| Grant 539, Albert V. Hardy | 500.00 |
| Grant 540, James W. Henry | 200.00 |
| Grant 541, Henry Laurens | 350.00 |
| Grant 542, Kendall B. Corbin | 200.00 |
| Grant 543, F. W. Dunihue | 50.00 |
| Grant 544, N. W. Popoff | 81.00 |
| Grant 545, A. G. Eaton | 300.00 |
| Grant 546, Francis D. Gunn | 300.00 |
| Grant 547, Max T. Schnitker | 300.00 |
| Grant 548, Warren O. Nelson | 300.00 |
| Grant 549, Felix Saunders | 250.00 |
| Grant 550, D. B. Phemister and K. S. Grimson | 400.00 |
| Grant 551, Hugh S. Morgan | 300.00 |
| Grant 552, Marion Fay | 250.00 |
| Grant 553, Paul L. Day and William C. Langston | 200.00 |
| Grant 554, Fritz Schiff | 400.00 |
| Grant 555, Roy H. Turner | 200.00 |
| Grant 556, Owen H. Wangensteen | 900.00 |
| Grant 557, W. D. Armstrong | 500.00 |
| Grant 558, Charles O. Warren Jr. | 262.00 |
| Grant 559, Harold D. West | 50.00 |
| Grant 560, B. S. Kline and H. P. Lankelma | 500.00 |
| Grant 561, Robert Sealock | 400.00 |
| Grant 562, Joseph H. Roe | 350.00 |
| Grant 563, Ben Vidgoff | 200.00 |
| Grant 564, Robert B. Greenblatt | 400.00 |
| Grant 565, Alexander S. Wiener | 200.00 |
| Clerical expense | 600.00 |
| Committee expense | 229.05 |
| Printing and supplies | 28.00 |
| | $14,831.05 |
| Balance on hand | $ 543.63 |

### GRANTS OF COMMITTEE ON SCIENTIFIC RESEARCH

*New Grants—1939*

Grant 529: Helen F. Tucker, Skidmore College, Saratoga, N. Y., $175, effect of amino acids on liver lipids.

Grant 530: George Herrmann, University of Texas, $200, chemical changes in heart muscle.

Grant 531: L. R. Dragstedt and G. M. Dack, University of Chicago, $600, Bacterium necrophorum.

Grant 532: Walter Schiller, Cook County Hospital, Chicago, $200, ovarian tumors.

Grant 533: Hardy A. Kemp and W. M. Fisher, Baylor University, $500, venom of southern and southwestern scorpions.

Grant 534: Martin Silberberg, Washington University School of Medicine, $600, effect of hormones on bone and cartilage.

Grant 535: W. R. Tweedy, Loyola University School of Medicine, Chicago, $200, phosphorus metabolism.

Grant 536: Catharine Macfarlane, Woman's Medical College of Pennsylvania, $1,900, value of periodic pelvic examination in detecting cancer of the uterus.

Grant 537: Herman Kabat, University of Minnesota, $400, neurophysiologic alterations in anemia of the brain.

Grant 538: Eben J. Carey, Marquette University, $750, physical and chemical agents influencing histologic signs of muscle and nervous action.

Grant 539: Albert V. Hardy, Columbia University, $500, Shigella dysenteriae.

Grant 540: James W. Henry, Loyola University School of Medicine, Chicago, $200, experimental hypertension.

Grant 541: Henry Laurens, Tulane University, $350, lowering of arterial pressure by carbon are radiation.

Grant 542: Kendall B. Corbin, University of Tennessee, $200, alterations in the hip after deafferentation.

Grant 543: F. W. Dunihue, University of Vermont, $50, action of aspartic acid on bone marrow.

Grant 544: N. W. Popoff, Highland Hospital, Rochester, N. Y., $81, functional rejuvenation.

Grant 545: A. G. Eaton, Louisiana State University Medical Center, $300, absorption of amino acids.

Grant 546: Francis D. Gunn, Northwestern University Medical School, $300, experimental tuberculosis in dogs.

Grant 547: Max T. Schnitker, Toledo Hospital, Toledo, Ohio, $300, Berger rhythm determinations following cerebral trauma.

Grant 548: Warren O. Nelson, Wayne University College of Medicine, Detroit, $300, relation of the thymus gland to growth and development.

Grant 549: Felix Saunders, University of Chicago, $250, growth requirements of pathogenic bacteria.

Grant 550: D. B. Phemister and K. S. Grimson, University of Chicago, $400, mechanism of blood pressure in sympathectomized dogs.

Grant 551: Hugh S. Morgan, Vanderbilt University School of Medicine, $300, bacterial infections in the chick embryo.

Grant 552: Marion Fay, Woman's Medical College of Pennsylvania, $250, biochemistry of strontium.

Grant 553: Paul L. Day and William C. Langston, University of Arkansas, $200, nutritional cytopenia in the monkey.

Grant 554: Fritz Schiff, Beth Israel Hospital, New York, $400, serologic classification of Salmonella.

Grant 555: Roy H. Turner, Tulane University, $200, physiology of peripheral blood vessels.

Grant 556: Owen H. Wangensteen, University of Minnesota, $900, physiologic basis of surgical treatment of duodenal and gastric ulcer.

Grant 557: W. D. Armstrong, University of Minnesota, $500, calcification of bone in vitro.

Grant 558: Charles O. Warren Jr., Cornell University Medical College, $262, metabolism of bone marrow.

Grant 559: Harold D. West, Meharry Medical College, $50, synthesis of *dl*-threonine.

Grant 560: B. S. Kline and H. P. Lankelma, Western Reserve University, $500, chemical study of antigens.

Grant 561: Robert R. Sealock, University of Rochester, $400, melanin pigmentation.

Grant 562: Joseph H. Roe, George Washington University, $350, vitamin C requirements of man.

Grant 563: Ben Vidgoff, University of Oregon Medical School, $300, isolation and effect of the inhibitory hormone of the testes on the endocrine glands.

Grant 564: Robert B. Greenblatt, University of Georgia, $400, influence of gonadotropic preparations on the human ovary.

Grant 565: Alexander S. Wiener, Office of the Chief Medical Examiner, New York City, $200, agglutinogens in human blood and studies on the Kline test.

## STATE OF WORK UNDER PREVIOUS GRANTS

### 1. Completed During the Year

Grant 324, 1934: William deB. MacNider, University of North Carolina, $285, study of artificial circulation in the kidney. MacNider, William deB., and Donnelly, G. L.: Value of Omentopexy in Establishing an Adventitious Circulation in the Normal Kidney, *Proc. Soc. Exper. Biol. & Med.* **40**: 271, 1939.

Grant 344, 1934: Paul L. Day and W. C. Langston, University of Arkansas School of Medicine, $300, effect of withdrawal of vitamin G from diet of monkeys. Shukers, Carroll F.; Langston, William C., and Day, Paul L.: The Normal Blood Picture of the Young Rhesus Monkey, *Folia haemat.* **60**: 416, 1938. Day, Paul L.; Langston, William C., and Darby, William J.: Failure of Nicotinic Acid to Prevent Nutritional Cytopenia in the Monkey, *Proc. Soc. Exper. Biol. & Med.* **38**: 860, 1938. Langston, William C.; Darby, William J.; Shukers, Carroll F., and Day, Paul L.: Nutritional Cytopenia (Vitamin M Deficiency) in the Monkey, *J. Exper. Med.* **68**: 923, 1938.

Grant 350, 1935: Frederic A. Gibbs, Harvard Medical School, $100, fiber system in the cat's brain concerned in convulsions. Gibbs, Erna Leonhardt, and Gibbs, Frederic Andrews: A Purring Center in the Cat's Brain, *J. Comp. Neurol.* **64**: 209, 1936. Gibbs, Frederic A.: Modification of the Cortical Frequency Spectrum by Changes in $CO_2$ Blood Sugar and $O_2$, *J. Neurophysiol.*, to be published.

Grant 379, 1935: Victor C. Myers (Donald E. Bowman), Western Reserve Medical School, $650, chemical test for pregnancy. Bowman, Donald E.: The Use of a Reducing Factor of Pregnancy Urine in the Diagnosis of Pregnancy, *J. Lab. & Clin. Med.* **24**: 1072, 1939.

Grant 388, 1935: Tracy J. Putnam, Boston City Hospital, Boston, $150, effect of low voltage current on nervous system. Alexander, Leo: Clinical and Neuropathological Aspects of Electrical Injuries, *J. Indust. Hyg. & Toxicol.* **20**: 191, 1938. Alexander, Leo: Electrical Injuries to Central Nervous System, *M. Clin. North America* **22**: 663, 1938. Weeks, Arthur W., and Alexander, Leo: The Distribution of Electric Current in the Animal Body: An Experimental Investigation of 60 Cycle Alternating Current, *J. Indust. Hyg. & Toxicol.* **21**: 517, 1939.

Grant 415, 1936: Gordon H. Scott, Washington University, St. Louis, $300, lead and aluminum in cerebrospinal fluid. Scott, Gordon H., and McMillen, J. Howard: Spectrographic Analyses of Human Spinal Fluid, *Proc. Soc. Exper. Biol. & Med.* **35**: 287, 1936. McMillen, J. Howard, and Scott, Gordon H.: Spectrographic Studies of Lead in Human Blood, *ibid.*, p. 364.

Grant 416, 1936: Jean Broadhurst, Teachers College, Columbia University, $200, inclusion bodies in the female genital area. Broadhurst, Jean; Ewing, Ruth; LeMoyne, Marguerite, and MacLean, Estelle: The Incidence of Cytoplasmic Inclusion Bodies in Vaginal Smears, to be published.

Grant 423, 1936: Alfred Gilman, Yale University, $300, physiology of the antidiuretic hormone of the posterior pituitary. Gilman, Alfred, and Goodman, Louis: Secretory Response of the Posterior Pituitary to the Need for Water Conservation, *J. Physiol.* **90**: 113, 1937. Gilman, Alfred, and Kidd, Nancy E.: The Antidiuretic Activity of Blood and Its Possible Relation to Histamine, *J. Pharmacol. & Exper. Therap.* **62**, 1938. Gilman, Alfred, and Goodman, Louis: Pituitrin Anemia, *Nature*, London **143**: 379, 1939.

Grant 444, 1937: George Herrmann, University of Texas, Galveston, $300, chemistry of the heart muscle. See grant $30, 1939. Herrmann, George and Erhard, Peter: Total Creatinine, Phosphates, Calcium and Potassium in Normal and Infarcted Myocardium of the Dog, *Proc. Soc. Exper. Biol. & Med.* **38**: 35, 1938. Herrmann, George and Decherd, George M., Jr.: The Chemical Nature of Heart Failure, *Ann. Int. Med.* **12**: 1233, 1939.

Grant 447, 1937: R. C. Herrin, University of Wisconsin, $400, urea clearance. Herrin, R. C., and Nicholes, H. J.: The Influence of Vitamin A upon Urea and Inulin Clearance in the Dog, *Am. J. Physiol.* **125**: 786, 1939. Herrin, R. C.: Influence of Vitamin A upon Urea Clearance in the Rat, *Proc. Soc. Exper. Biol. & Med.*, to be published. Herrin, R. C.: The Influence of Vitamin A upon Urea Clearance in the Human Subject, *J. Clin. Investigation*, to be published.

Grant 449, 1937: Charles W. Turner, University of Missouri, $250, pituitary hormones. See grant 511, 1938. Turner, C. W., and Cuppa, F. T.: The Thyrotropic Hormone in the Pituitary of the Albino Rat During Growth, Pregnancy and Lactation, *Endocrinology* **24**: 650, 1939. Bergman, L. J., and Turner, C. W.: A Comparison of the Guinea Pig and Chick Thyroid in the Assay of the Thyrotropic Hormone, *ibid.*, p. 656.

Grant 458, 1937: Orthello R. Langworthy, Johns Hopkins University, $350, effect of ovulation and pregnancy on smooth muscle of urinary bladder (refund 15 cents). Langworthy, O. R., and Brack, C. B.: The Effect of Pregnancy and Corpus Luteum on Vesical Muscle, *Am. J. Obst. & Gynec.* **37**: 121, 1939. Brack, C. B., and Langworthy, O. R.: The Effect of Estrogenic Hormone on Vesical Muscle, *Endocrinology* **25**: 111, 1939.

Grant 460, 1937: M. G. Seelig, Barnard Free Skin and Cancer Hospital, St. Louis, $250, carcinogenicity of heterocyclic hydrocarbons. Joseph, Lionel: Nitrogen-Containing Carcinogenic Compounds, *Proc. Soc. Exper. Biol. & Med.* **41**: 334, 1939.

Grant 465, 1937: Fred L. Humoller, Loyola University School of Medicine, Chicago, $300, toxic principles in culture fluids of Bacterium enteritidis. Humoller, Fred L.; Lonert, A. C., and Bottino, Clement G.: The Preparation of an Antigenic Toxin from Salmonella Enteritidis, *J. Infect. Dis.* **65**: 206, 1939.

Grant 469, 1937: Joseph Krafka Jr., University of Georgia School of Medicine, $370, elastometric measurements on smooth muscle and connective tissue. Krafka, Joseph, Jr.: Comparative Study of the Histophysics of the Aorta, *Am. J. Physiol.* **125**: 1, 1939; Changes in Elasticity of the Aorta with Age, *Arch. Path.*, to be published.

Grant 478, 1937: Martin Silberberg, Washington University School of Medicine, $600, influence of hormones on bone growth. See grant 534, 1939. Silberberg, Martin, and Silberberg, Ruth: Influence of Cattle Anterior Pituitary Extract on Endochondral Ossification in Young Ovariectomized Pigs, *Proc. Soc. Exper. Biol. & Med.* **37**: 446, 1938. Silberberg, Martin, and Silberberg, Ruth: Effects of Anterior Pituitary Implants and Extracts on Epiphyses and Joints of Immature Female Guinea Pigs, *Arch. Path.* **26**: 1208, 1938. Silberberg, Martin, and Silberberg, Ruth: The Effects of Thyroid Feeding on Growth Processes and Retrogressive Changes in Bone and Cartilage of the Immature Guinea Pig, *Growth* **2**: 327, 1938. Silberberg, Martin, and Silberberg, Ruth: The Growth and Retrogressive Changes in Cartilage and Bone of the Guinea Pig Produced by Potassium Iodide, *ibid.*, p. 369. Silberberg, Martin, and Silberberg, Ruth: Growth Processes in Cartilage and Bone Subsequent to Gonadectomy and Administration of Anterior Pituitary Extract of Cattle in Immature Male and Female Guinea Pigs, *Arch. Path.* **15**: 56, 1939. Silberberg, Martin, and Silberberg, Ruth: A Comparison of the Effects of Anterior Pituitary Hormone on Skeletal Tissues of Young and Mature Guinea Pigs, *ibid.*, p. 547. Silberberg, Martin, and Silberberg, Ruth: Action of Estrogen on Skeletal Tissues of Immature Guinea Pigs, *Arch. Path.* **28**: 340, 1939.

Grant 482, 1937: Warren O. Nelson, Wayne University College of Medicine, Detroit, $400, effect of thymus gland on the growth of rats. See grant 548, 1939. Janes, Ralph G., and Segaloff, Albert: Growth and Metamorphosis of Anuran Larvae on Thymus Extracts, *Proc. Soc. Exper. Biol. & Med.* **39**: 172, 1938. Segaloff, Albert, and Nelson, Warren O.: The Thymus-Adrenal Relationship, *Am. J. Physiol.*, to be published. Segaloff, Albert, and Nelson, Warren O.: Growth of Vitamin Deficient Rats Treated with Thymocrescin, *Endocrinology*, to be published.

Grant 484, 1938: William Antopol, Newark Beth Israel Hospital, Newark, N. J., $250, Shwartzman phenomenon. Antopol, William, and Glick, David: Organs as a Source of Factors Capable of Eliciting the Shwartzman Phenomenon, *Proc. Soc. Exper. Biol. & Med.* **38**: 346, 1938. Antopol, William; Schifrin, Arthur, and Tuchman, Lester: Decreased Cholinesterase Activity of Serum in Jaundice and in Biliary Disease, Glick, David, and Antopol, William: Studies on the Chemical Nature of Factors Producing the Shwartzman Phenomenon, *J. Infect. Dis.* **64**: 22, 1939.

Grant 485, 1938: Erwin Chargaff, Columbia University, $400, chemistry and physiology of obstructive jaundice. Olson, Kenneth B., and Menzel, Hildegard: The Bleeding Tendency in Obstructive Jaundice and Its Correction by Means of Vitamin K, *Surgery* **6**: 206, 1939.

Grant 486, 1938: Ben Vidgoff, University of Oregon Medical School, $300, inhibitory hormone of the germinal epithelial cells of the testis and its effect on the prostate. See grant 563, 1939. Vidgoff, Ben; Vehrs, Herman, and Hill, Richard: Studies on the Aqueous Testicular Hormone: I. Changes in Male Secondary Sex Organs, *West. J. Surg.* **48**: 648, 1938. Vidgoff, Ben: The Hormonal Control of the Prostate and Its Relation to Clinical Prostatic Hypertrophy, *J. Urol.* **42**: 359, 1939. Vidgoff, Ben; Hill, Richard; Vehrs, Herman, and Kubin, R.: Studies on the Inhibitory Hormone of the Testis: II. Preparation and Changes Produced in the Sex Organs of the Adult Male White Rat, *Endocrinology* **25**: 391, 1939. Vidgoff, Ben, and Hill, Richard: Studies on the Inhibitory Hormone of the Testes: III. Histological Effects on the Male Sex Organs of the White Rat, *ibid.*, p. 568.

Grant 487, 1938: Felix Saunders, University of Chicago, $250, isolation of growth factors. Dorfman, Albert; Koser, Stewart A., and Saunders, Felix: The Activity of Certain Nicotinic Acid Derivatives as Growth Essential for the Dysentery Bacillus, *Am. Chem. Soc.* **60**: 2004, 1938. Dorfman, Albert; Koser, S. A.; Reames, H. R.; Swingle, K. F., and Saunders, Felix: Nicotinamide and Related Compounds as Essential Growth Substances for Dysentery Bacilli, *J. Infec. Dis.* **65**: 163, 1939.

Grant 488, 1938: Lester R. Dragstedt and G. M. Dack, University of Chicago, $600, relationship of Bacterium necrophorum to ulcerative colitis. See grant 531, 1939. Dack, G. M., and Dragstedt, Lester R.: Effect of Introducing Oxygen into the Isolated Colon of a Patient with Chronic Colitis, *Am. J. Digest. Dis.* **5**: 84, 1938. Dack, G. M., and others: Comparison of Bacterium Necrophorum from Ulcerative Colitis in Man with Strains Isolated from Animals, *J. Infect. Dis.* **63**: 169, 1938.

Grant 489, 1938: Alexander S. Wiener, Jewish Hospital of Brooklyn, $200, agglutinogens in human blood and studies on Kline test. See grant 565, 1939. Wiener, Alexander S., and Derby, Irving M.: Site of Origin of Syphilitic Reagin in Spinal Fluid of Patients with Neurosyphilis, *Proc.*

*Soc. Exper. Biol. & Med.* **38**: 487, 1938. Wiener, Alexander S., and Herman, Morris: The Second Stage of the Agglutinative Reaction, *J. Immunol.* **36**: 255, 1939. Wiener, Alexander S., and Derby, Irving M.: Syphilitic Reagin in Blood and in Spinal Fluid, *Arch. Dermat. & Syph.* **39**: 999, 1939. Schaefer, George, and Wiener, Alexander S.: Limitations in the Use of Preserved Blood for Transfusions, *Quart. Bull. Sea View Hosp.* 1939, Oct. Wiener, Alexander S., and Silverman, I. Jerome: Permeability of the Human Placenta to Antibodies, *J. Exper. Med.* **71**: 21, 1940.

Grant 490, 1938: Peter Heinbecker, Washington University School of Medicine, $500, pituitary regulation of water balance in the dog. White, H. L., and Heinbecker, Peter: Observations on Creatinine and Urea Clearances, on Responses to Water Ingestion and on Concentrating Power of Kidneys in Normal, Diabetes Insipidus and Hypophysectomized Dogs, *Am. J. Physiol.* **123**: 566, 1938. White, H. L., and Heinbecker, Peter: The Role of the Pituitary Gland in Water Balance, *Ann. Surg.*, to be published.

Grant 493, 1938: George M. Curtis, Ohio State University, $600, iodine and calcium metabolism in thyroid disease. Puppel, Italo D., and Curtis, George M.: The Iodine Balance in Nodular Goiter, *J. Clin. Investigation* **17**: 729, 1938. Puppel, Italo D., and Curtis, George M.: Iodine Balance in Exophthalmic Goiter, *Arch. Path.* **26**: 1093, 1938. Curtis, George M., and Puppel, Italo D.: The Iodine Metabolism in Thyroid Disease, *Tr. Third Internat. Goiter Conference*, 1938.

Grant 496, 1938: Samuel Soskin, Michael Reese Hospital, Chicago, $500, laboratory tests for endocrine dysfunction. Freed, S. C.; Greenhill, J. P., and Soskin, Samuel: Biphasic Effect of Male Sex Hormone on the Pituitary of the Female Rat, *Proc. Soc. Exper. Biol. & Med.* **39**: 440, 1938. Hechter, Oscar; Lev, Maurice, and Soskin, Samuel: The Relation of Hyperemia to the Action of Estrin, Endocrinology **26**: 73, 1940.

Grant 497, 1938: Albert P. Krueger, University of California, $300, bacteriophage. Krueger, A. P., and Scribner, E. J.: Serial Production of Phage from Intracellular Phage Precursor, *Proc. Soc. Exper. Biol. & Med.* **40**: 51, 1939.

Grant 500, 1938: Moore E. Mills and Francis D. Gunn, Northwestern University Medical School, $300, experimental pulmonary tuberculosis in dogs. Mills, Moore A., and Colwell, Charlotte A.: Tubercle Bacilli Suspended in Gastric Mucin, *Am. Rev. Tuberc.* **40**: 109, 1939.

Grant 509, 1938: Roe E. Remington, Medical College of the State of South Carolina, $400, iodine deficiency in the rat. Remington, Roe E.: Effect of Vitamin A and Carotene on Low-Iodine Goiter, in course of publication. Remington, Roe E.: Effect of Ultraviolet Irradiations upon Iodine Metabolism and Goiter Production, in course of publication.

Grant 514, 1938: Samuel R. M. Reynolds, Long Island College of Medicine, $200, action of estrin on small blood vessels. Reynolds, Samuel R. M., and Foster, Frances I.: Peripheral Vascular Action of Estrin in the Rabbit and Human, *Am. J. Physiol.* **126**: 606, 1939. Reynolds, Samuel R. M., and Foster, Frances I.: Acetylcholine-Equivalent Content of the Uterus and Placenta in Rabbits, *ibid.* **127**: 343, 1939. Reynolds, Samuel R. M., and Foster, Frances I.: Peripheral Vascular Action of Estrogen in the Human Male, *J. Clin. Investigation* **18**: 649, 1939. Reynolds, Samuel R. M., and Foster, Frances I.: Peripheral Vascular Action of Estrogen Observed in the Ear of the Rabbit, *J. Pharmacol. & Exper. Therap.* **68**: 173, 1940.

Grant 515, 1938: Robert R. Sealock, University of Rochester, $400, relation of metabolism of melanin pigment precursors to vitamin C requirements. Sealock, R. R., and Silberstein, H. E.: The Control of Experimental Alkaptonuria by Means of Vitamin C, *Science*, to be published. Sealock, Robert R.; Ziegler, B., and Driver, R. L.: The Metabolism of the Melanin Pigment Precursors, Tyrosine and Dihydroxyphenylalanine, in Relation to the Vitamin C Requirement, in course of publication.

Grant 520, 1938: H. E. Carter, University of Illinois, $250, betaines of aminohydroxy acids. Carter, Herbert E., and Melville, Donald B.: Synthesis and Determination of the Lipotropic Activity of the Betaine Hydrochlorides of *dl*-Serum, *dl*-Threonine and *dl*-Allothreonine, *J. Biol. Chem.*, to be published.

Grant 523, 1938: Frederick A. Fender, Stanford University School of Medicine, $150, development of device for direct neurologic stimulation. Fender, Frederick A.: A Precision Device for Faradic Stimulation, Science **89**: 491, 1939.

Grant 525, 1938: A. R. Buchanan, University of Mississippi, $400, vestibular mechanism (refund, $177.80). Buchanan, A. R.: Nystagmus and Eye Deviations in Guinea Pigs with Vestibular Nuclear Lesions, in course of publication.

Grant 538, 1939: Eben J. Carey, Marquette University, $750, physical and chemical agents that influence the histologic signs of muscle and nerve action. Carey, Eben J., and Zeit, Walter: Micro-Incineration of Active Smooth, Transitional and Skeletal Muscles, *Proc. Soc. Exper. Biol. & Med.* **41**: 31, 1939. Carey, Eben J.: Thermal and Capillary Effects on the Quantitative Variability and Orientation of Muscle Cross Striae, *Anat. Rec.* **73**: (suppl. 2) 11, 1939. Carey, Eben J.: The Wave Mechanics of Muscle Action, *Arch. Path.*, to be published.

### 2. Incomplete

A. Work under the grant completed, account rendered of expenses but results not published fully:

Grant 286, 1933: F. H. Pike, Columbia University, $600, the effects of successive experimental lesions of the nervous system.

Grant 308, 1933: John L. Ulrich, Johns Hopkins University, $250, the reflex system in the cat. See grant 372, 1935.

Grant 309, 1933: Carroll L. Birch, University of Illinois School of Medicine, $300, assay of urine for sex hormone of the anterior pituitary.

Grant 367, 1935: Robert Gault and A. C. Ivy, American Institute for the Deaf-Blind, Evanston, Ill., $600, mechanical stimulation of the vibrotactile organs. See grant 412, 1936.

Grant 372, 1935: John L. Ulrich, Johns Hopkins University, $450, cerebral functions in the action of antagonistic muscles. See grant 308, 1933.

Grant 382, 1935: L. Goodman, A. J. Geiger and L. Claiborn, Yale University, $250, antianemic principle.

Grant 401, 1936: W. T. Dawson, University of Texas, Galveston, $200, toxicity of cardiac glucosides.

Grant 407, 1936: Ralph I. Dorfman, Louisiana State University, $250, estrogenic substance in human urine and other estrogenic compounds.

Grant 412, 1936: Robert H. Gault and A. C. Ivy, American Institute for Deaf-Blind, Evanston, Ill., $400, stimulation of vibrotactile organs by mechanical vibrations. See grant 367, 1935.

Grant 431, 1936: Benjamin Harrow, College of the City of New York, $200, purification of the hyperglycemic factor in urine.

Grant 448, 1937: Warren H. Cole, University of Illinois College of Medicine, $500, cholesterol tolerance as an index of hyperthyroidism and study of excretory function of the liver.

Grant 452, 1937: G. Albin Matson, Montana State University, Missoula, $100, antigenic properties of certain chemical substances.

Grant 456, 1937: Ira A. Manville, University of Oregon Medical School, $500, relation of degenerative changes in connective tissue to glycuronic metabolism.

Grant 463, 1937: Jay Conger Davis, Minneapolis, $600, action of certain drugs on the coronary arteries (refund, $194.03).

Grant 464, 1937: Frank W. Allen, University of California, $200, relation of nucleotide fraction of red corpuscles to glycolysis.

Grant 467, 1937: B. O. Barnes, Rush Medical College, $300, extract of adrenals.

Grant 471, 1937: Timothy Leary, Office of Medical Examiner, Boston, $500, early atherosclerotic processes and relation of cholesterol to neoplastic growth.

Grant 472, 1937: Margaret Lasker, Yonkers, N. Y., $200, incidence of pentosuria and fructosuria.

Grant 480, 1937: Amy L. Daniels, State University of Iowa, $250, relation of fluorine to physiologic function.

Grant 483, 1937: J. M. Joblin, Vanderbilt University School of Medicine, $250, attenuation of toxins by interfacial adsorption. Joblin, J. M.: Attenuation of Toxins by Interfacial Adsorption, *Proc. Soc. Exper. Biol. & Med.* **39**: 568, 1938.

Grant 492, 1938: Solomon Strouse and B. O. Raulston, University of Southern California, $300, sodium-potassium relationship in diabetes.

Grant 513, 1938: John S. Lawrence, University of Rochester, $350, transmissible granulocytopenia in the cat.

Grant 521, 1938: Rucker Cleveland, Vanderbilt University, $400, cytology of endometrium.

### B. Active Work Still in Progress

Grant 254, 1932: J. Lisle Williams, Rush Medical College, Chicago, $200, decreased dextrose tolerance in acute infectious diseases.

Grant 310, 1934: Lay Martin, Johns Hopkins University, $150, study of gastric juice. See grant 462, 1937.

Grant 337, 1934: James L. O'Leary, Washington University, $245, Loven reflexes. Bishop, G. H., and O'Leary, James: Pathways Through the Sympathetic Nervous System in the Bullfrog, *J. Neurophysiol.* **1**: 442, 1938.

Grant 355, 1935: Royall M. Calder, San Antonio, Texas, $150, mechanism of pneumococcic inflammation.

Grant 410, 1936: H. E. Eggers, University of Nebraska, $200, effect of tetra-methyl-arsonium gluconate on human cancer.

Grant 413, 1936: Philip Levine, Newark Beth Israel Hospital, Newark, N. J., $350, bacteriophage action in the dysentery group. Levine, Philip, and Perlstein, David: Phage-Specific Heat-Labile Factors in B. Dysenteriae Sonne, *Proc. Soc. Exper. Biol. & Med.* **36**: 295, 1937.

Grant 420, 1936: Arthur Knudson, Albany Medical College, $400, synthesis of cholesterol in the animal body. Sturges, Stuart, and Knudson, Arthur: Application of the Schoenheimer-Sperry Method to the Determination of Cholesterol and Cholesterol Esters in Tissues, *J. Biol. Chem.* **126**: 543, 1938.

Grant 434, 1936: Wilbert H. McGaw, Western Reserve University, $500, sound conduction in fractured bones.

Grant 441, 1937: Edward S. West and G. E. Burget, University of Oregon Medical School, $350, diuretic action and chemical metabolism of sorbitol. Todd, W. R.; Myers, Jane, and West, Edward S.: On the Metabolism of Sorbitol and Mannitol, *J. Biol. Chem.* **127**: 275, 1939.

Grant 442, 1937: S. J. Crowe, Johns Hopkins University, $480, physiology of hearing. Wald, Edward M.: The Effect of Chemicals on Cochlear Potentials, *Am. J. Physiol.* **125**: 688, 1939.

Grant 443, 1937: Ernest Carroll Faust, Tulane University, $300, epidemiology of trichinosis in New Orleans. Sawitz, Willi: Are Post-mortem Statistics on Trichinosis Valid for the Living Population? *Am. J. Pub. Health* **27**: 1023, 1937. Sawitz, Willi: Studies on Trichinella Spiralis in the New Orleans Area, *Arch. Path.* **28**: 11, 1939.

Grant 445, 1937: Paul M. Levin, Johns Hopkins University, $250, cerebral efferent tracts in primates. Levin, Paul M.: A Nervous Structure in the Pineal Body of the Monkey, *J. Comp. Neurol.* **68**: 405, 1938. Levin, Paul M., and Bradford, F. Keith: The Exact Origin of the Corticospinal Tract in the Monkey, *ibid.*, p. 411.

Grant 451, 1937: Frank Co Tui, New York University, $200, Shwartzman phenomenon and pyrogenic reaction. See grant 520, 1938.

Grant 453, 1937: L. T. Samuels and C. H. Thienes, University of Southern California, $300, hypophysis in metabolism of carbohydrate fat and metabolism.

Grant 455, 1937: Elizabeth S. Russell, Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Me., $225, genetics of tumors in the fruit fly. See grant 505, 1938.

Grant 462, 1937: Lay Martin, Johns Hopkins University, $200, gastric juice. See grant 310, 1934.

Grant 473, 1937: Roy H. Turner, Tulane University, $400, physiology of blood vessels in man. See grant 511, 1938.

Grant 474, 1937: Marion Fay, Woman's Medical College of Pennsylvania, $275, biochemistry of strontium. See grant 552, 1939.

Grant 477, 1937: Irving J. Welman, University of Pennsylvania, $335, lipoid pneumonia. See grant 517, 1938.

Grant 479, 1937: Tracy J. Putnam, Boston City Hospital, $200, injuries to the cervical cord.

Grant 481, 1937: Warren O. Nelson, Wayne University College of Medicine, Detroit, $200, synthetic androgenic substances.

Grant 491, 1938: Charles G. Johnston, Wayne University College of Medicine, Detroit, $660, intestinal obstruction. Abbott, W. Osler, and Johnston, Charles G.: Intubation Studies of the Human Small Intestine: X. A Nonsurgical Method of Treating, Localizing and Diagnosing the Nature of Obstructive Lesions, *Surg., Gynec. & Obst.* **66**:691, 1938. Johnston, Charles G., and others: Decompression of the Small Intestine in the Treatment of Intestinal Obstruction, *J. A. M. A.* **111**:1365, 1938. Noer, R. J., and Johnston, Charles G.: Decompression of the Small Bowel in Intestinal Obstruction, *Am. J. Digest. Dis. & Nutrition* **6**:46, 1939. Lofstrom, James E., and Noer, Rudolf J.: The Use of Intestinal Intubation in the Localization of Lesions of the Gastrointestinal Tract, *Am. J. Roentgenol.* **42**:321, 1939. Penberthy, Grover C.; Johnston, Charles G., and Noer, R. J.: The Treatment of Adynamic Ileus by Gastrointestinal Intubation, *South. Surgeon* **8**:416, 1939.

Grant 494, 1938: Catharine Macfarlane, Woman's Medical College of Pennsylvania, $480, value of periodic pelvic examination in detecting cancer of the uterus. See grant $36, 1939. Macfarlane, Catharine: An Experiment in Cancer Control, *Bull. Am. Soc. Control Cancer* **21**:6 (Nov.) 1939.

Grant 495, 1938: Lincoln Opper and Barnett Sure, University of Arkansas, $600, relation of vascular disease to avitaminosis in the rat. Opper, Lincoln: Experimental Vascular Disease in Rats Produced by Multiple Depletions of Vitamin A, *Proc. Soc. Exper. Biol. & Med.* **40**: 449, 1939.

Grant 498, 1938: Henry Laurens, Tulane University, $351.50, lowering of arterial pressure by carbon are radiation. See grant 541, 1939.

Grant 499, 1938: Robert W. Virtue, University of Denver, $365, formation of bile acids. Virtue, Robert W., and Doster-Virtue, M. E.: Studies on the Formation of Taurocholic Acid in Man. Dog: IV. Cystein, Homocysteine and Thioglycolic Acid, *J. Biol. Chem.* **128**:665, 1939.

Grant 501, 1938: Arthur H. Smith, Wayne University College of Medicine, Detroit, $200, serum proteins in relation to blood volume.

Grant 503, 1938: R. C. Robb, Syracuse University College of Medicine, $800, diseases in twins.

Grant 504, 1938: Wallace M. Yater, Georgetown University Medical School, $500, histopathology of "bundle branch" block.

Grant 505, 1938: Elizabeth S. Russell, Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Me., $250, genetics of tumors in the fruit fly. See grant 455, 1937.

Grant 506, 1938: Harry Sobotka, Mount Sinai Hospital, New York, $150, monomolecular layers of physically active substances.

Grant 507, 1938: Joseph H. Roe, George Washington University, $500, vitamin C content of plant, animal and tumor tissue. See grant 562, 1939. Roe, Joseph H., and Hall, James M.: The Vitamin C Content of Human Urine and Its Determination Through the 2,4-Dinitrophenylhydrazine Derivative of Dehydroascorbic Acid, *J. Biol. Chem.* **128**:329, 1939.

Grant 508, 1938: Louis N. Katz, Michael Reese Hospital, Chicago, $250, factors influencing activities of the heart.

Grant 510, 1938: Erma A. Smith, Iowa State College, $150, influence of various substances on gastrointestinal motility.

Grant 511, 1938: Charles W. Turner, University of Missouri, $500, relation of thyrotropic hormone of anterior pituitary to pregnancy and lactation. See grant 449, 1937.

Grant 512, 1938: Barnes Woodhall, Duke University Hospital, $350, reactions to implanted Shope rabbit papilloma by cerebral tissue. Woodhall, Barnes; Graves, Robert W., and Beard, J. W.: Experimental Production of Tumors of the Brain with the Shope Rabbit Papilloma, *Arch. Surg.* **38**:457, 1939.

Grant 516, 1938: Charles O. Warren Jr., Cornell University Medical College, $300, metabolism of bone marrow. See grant 558, 1939.

Grant 517, 1938: Irving J. Welman, Children's Hospital of Philadelphia, $170, lipoid pneumonia. See grant 477, 1937.

Grant 518, 1938: Harold D. West, Meharry Medical College, $100, synthesis of *dl*-threonine. See grant 559, 1939.

Grant 519, 1938: D. B. Phemister and Harwell Wilson, University of Chicago, $400, mechanism of blood pressure in sympathectomized dogs. See grant 550, 1939.

Grant 522, 1938: Ludwig A. Emge, Stanford University School of Medicine, $500, relation of sex hormones to tumor growth.

Grant 524, 1938: Ernest Spiegel, Temple University, $300, physicochemical factors influencing the excitability of the central nervous system.

Grant 526, 1938: Charles F. Code, University of Minnesota, $400, metabolism of histamine.

Grant 527, 1938: Alexander Levy, University of Oregon Medical School, $300, occlusion of the coronary arteries.

Grant 528, 1938: Frank Co Tui, New York University, $150, relation between Shwartzman agent and pyrogen. See grant 451, 1937.

### 3. No Publishable Results Obtained

Grant 397, 1936: R. F. Hanzal, Western Reserve University, $150, source of endogenous uric acid and the effects of methylated xanthines on its secretion (refund, $80.05).

Grant 398, 1936: George A. Emerson, West Virginia University, Morgantown, $175, metabolic products of sympathomimetic amines (refund, $48.69).

Grant 466, 1937: G. Louis Weller Jr., George Washington University, $275, effect of sodium pyruvate and other substances on vitamin B deficiency (refund, $104.78).

## Report of Committee on Therapeutic Research

The Committee on Therapeutic Research, a standing committee of the Council on Pharmacy and Chemistry, encourages scientific investigations in the field of therapeutics by providing funds to be used in the prosecution of necessary research.

During the year 1939 the committee issued twenty-nine new grants. A detailed list of these grants, together with a list of publications during 1939 and of unexpired grants made before Jan. 1, 1939, will be found in the appended report.

The following is a list of the investigations conducted with the assistance of grants made by the Committee on Therapeutic Research, reports of which were published during 1939:

Morphine Addiction and Withdrawal: Effect of Calcium Therapy on Symptoms and Tissue Hydration, C. H. Thienes and L. E. Detrick: *J. Pharmacol. & Exper. Therap.* **66**:36 (May) 1939.

Negative Effect of Chronic Morphinism on the Anorexia Characteristic of Vitamin $B_1$ Deficiency, George R. Cowgill: *Proc. Soc. Exper. Biol. & Med.* **40**:201 (Feb.) 1939.

The Magnitude, Adequacy and Source of the Collateral Blood Flow and Pressure in Chronically Occluded Coronary Arteries, Donald E. Gregg, John J. Thornton and Frederick R. Mauts: *Am. J. Physiol.* **127**:161 (Aug.) 1939.

Diabetes in Rats and Its Alleviation with Sodium Chloride, James M. Orten and Henry B. Devlin: *Proc. Soc. Exper. Biol. & Med.* **42**:632 (Nov.) 1939.

Yields of Stibines and Arsines, Joseph Seifter: *J. Am. Chem. Soc.* **61**: 530 (Feb.) 1939.

Pharmacology of Metal Alkyls: II. Trimethylstibine, Joseph Seifter: *J. Pharmacol. & Exper. Therap.* **66**:366 (July) 1939.

The Pharmacology of Trimethyl Bismuth, Torald Sollmann and Joseph Seifter: *J. Pharmacol. & Exper. Therap.* **67**:17 (Sept.) 1939.

Morphine as a Metabolic Stimulant, Henry G. Barbour, Janet A. Porter and Joyce M. Seelye: *J. Pharmacol. & Exper. Therap.* **65**:332 (March) 1939.

The Depressant Action of Picrotoxin and Metrazol, James M. Dille and Lloyd W. Hazleton: *J. Pharmacol. & Exper. Therap.* **67**:276 (Nov.) 1939.

Alkyl Nitrites: III. A Pharmacologic Study of a New Series of Organic Nitrates, John C. Krantz Jr., C. Jelleff Carr, Sylvan Forman and Fred W. Ellis: *J. Pharmacol. & Exper. Therap.* **67**:187 (Oct.) 1939.

Alkyl Nitrites: IV. The Pharmacology of Isomannide Dinitrate, John C. Krantz Jr., C. Jelleff Carr, Sylvan E. Forman and Fred W. Ellis: *J. Pharmacol. & Exper. Therap.* **67**:191 (Oct.) 1939.

Researches on Quinazolines: XLIV. The Synthesis of Some New Quinazoline Derivatives of Veratrole Akin to Alkaloids, Charles Arther Fetscher and Marston Taylor Bogert: *J. Organic Chem.* **4**:71 (March) 1939.

The Effect of Certain Barbiturates upon the Oxygen Uptake and Anaerobic Reduction of Methylene Blue by Rat Liver and Brain, Carla M. Zorn, Edward Muntwyler and O. W. Barlow: *J. Pharmacol. & Exper. Therap.* **66**:326 (July) 1939.

The Termination of Pregnancy of Dogs by Gonadotropic Antihormone, K. W. Thompson: *Endocrinology* **24**:613 (May) 1939.

Cytological Changes Induced in the Hypophysis by the Prolonged Administration of Pituitary Extract, A. E. Severinghaus and K. W. Thompson: *Am. J. Physiol.* **125**:391 (July) 1939.

Experimental Infection in the Mouse Produced by Intratracheal Inoculation with an Atypical Pertussis Organism, William L. Bradford and Mary Wold: *J. Infect. Dis.* **64**:118 (March-April) 1939.

Protective Value of Immune Rabbit Serum and Its Globulin Fraction Against Experimental Murine Infection with Haemophilus Pertussis, Henry W. Scherp, William L. Bradford and Mary Wold: *Proc. Soc. Exper. Biol. & Med.* **42**:172 (Oct.) 1939.

Negative Chemotropism in Leukocytes, Morton McCutcheon, Dale Rex Coman and Harold M. Dixon: *Arch. Path.* **27**:61 (Jan.) 1939.

Failure of Streptococcal Antibodies to Influence Chemotaxis of Leukocytes, Dale Rex Coman, Morton McCutcheon and Paul T. DeCamp: *Proc. Soc. Exper. Biol. & Med.* **41**:119 (May) 1939.

Electrophoresis of Anterior Pituitary Proteins, Reginald A. Shipley, Kurt G. Stern and Abraham White: *J. Exper. Med.* **69**:785 (June 1) 1939.

The Analeptic Potency of Sympathomimetic Amines, M. L. Tainter, L. J. Whitsell and J. M. Dille: *J. Pharmacol. & Exper. Therap.* **67**: 56 (Sept.) 1939.

Comparison of Different Types of Central Stimulation from Analeptics, J. W. Schulte, M. L. Tainter and J. M. Dille: *Proc. Soc. Exper. Biol. & Med.* **42**:242 (Oct.) 1939.

Comparative Pressor Efficiency of Sympathomimetic Amines in the Normal State and in Decerebrate Shock, Cathrine A. Crismon and M. L. Tainter: *J. Pharmacol. & Exper. Therap.* **66**:146 (June) 1939.

Sympathomimetic Stimulants in Acute Circulatory Failure of Phenol Shock, M. L. Tainter, A. W. Footer and Harold Hanzlik: *Am. J. M. Sc.* **197**:796 (June) 1939.

Local and Systemic Effects from Inhalation of Strong Solutions of Epinephrine, J. V. Galgiani, Frederick Proescher, William Dock and M. L. Tainter: *J. A. M. A.* **112**:1929 (May 13) 1939.

Effect of Sex Life upon Resistance to Nostal and Pentobarbital, Harald G. O. Holck and Lewis D. Fink: *J. Pharmacol. & Exper. Therap.* **66**: 18 (May) 1939.

Analysis of the Emptying of Segments of the Arterial Reservoir, Philip Dow and W. F. Hamilton: *Am. J. Physiol.* **127**:785 (Nov.) 1939.

Differential Pressures in the Lesser Circulation of the Unanesthetized Dog, W. F. Hamilton, R. A. Woodbury and Elkin Vogt: *Am. J. Physiol.* **125:** 130 (Jan.) 1939.

Effects of Repeated Anesthetic Doses of Barbiturates, Roberta Hafkesbring, Esther M. Greisheimer and H. Magalhaes: *J. Pharmacol. & Exper. Therap.* **66:** 95 (May) 1939.

Electrical Studies on the Pharmacology of Autonomic Synapses: II. The Action of a Sympathomimetic Drug (Epinephrine) on Sympathetic Ganglia, Amedeo S. Marrazzi: *J. Pharmacol. & Exper. Therap.* **65:** 393 (April) 1939.

The Sympathetic Central and Ganglionic Actions of Ephedrine, Amedeo S. Marrazzi: *J. Pharmacol. & Exper. Therap.* Proc. **66:** 24 (May) 1939.

A Self-Limiting Mechanism in Sympathetic Homeostatic Adjustment, Amedeo S. Marrazzi: *Science* **90:** 251 (Sept. 15) 1939.

Electrical Studies on the Pharmacology of Autonomic Synapses: III. The Action of Ephedrine Analyzed by a Study of Its Sympathetic Central and Ganglionic Effects, Amedeo S. Marrazzi: *J. Pharmacol. & Exper. Therap.* **67:** 321 (Nov.) 1939.

Cardiovascular and Neuromuscular Changes Following Intravenous Injection of Magnesium Salts, H. E. Hoff, A. W. Winkler and P. K. Smith: *Am. J. Physiol.* **126:** P537 (July) 1939.

Calcium and Digitalis Synergism: The Toxicity of Calcium Salts Injected Intravenously Into Digitalized Animals, P. K. Smith, A. W. Winkler and H. E. Hoff: *Arch. Int. Med.* **64:** 322 (Aug.) 1939.

Electrocardiographic Changes and Concentration of Calcium in Serum Following Intravenous Injection of Calcium Chloride, H. E. Hoff, P. K. Smith and A. W. Winkler: *Am. J. Physiol.* **125:** 162 (Jan.) 1939.

Electrocardiographic Changes and Concentration of Magnesium in Serum Following Intravenous Injection of Magnesium Salts, P. K. Smith, A. W. Winkler and H. E. Hoff: *Am. J. Physiol.* **126:** 720 (July) 1939.

Factors Affecting the Toxicity of Potassium, A. W. Winkler, H. E. Hoff and P. K.Smith: *Am. J. Physiol.* **127:** 430 (Oct.) 1939.

The Relation of Blood Pressure and Concentration in Serum of Potassium, Calcium and Magnesium, H. E. Hoff, P. K. Smith and A. W. Winkler: *Am. J. Physiol.* **127:** 722 (Nov.) 1939.

The Effect of Fluidextract of Ergot and of Ergotamine on the Emptying Time of the Human Stomach, E. J. Van Liere and C. K. Sleeth: *J. Pharmacol. & Exper. Therap.* **67:** 250 (Oct.) 1939.

Quantitative Determination of Selenium in Tissues and Feces—A Photometric Method, Roscoe A. Gortner Jr. and Howard B. Lewis: *Indust. & Engin. Chem.* **11:** 198 (April 15) 1939.

The Retention and Excretion of Selenium After the Administration of Sodium Selenite to White Rats, Ross A. Gortner Jr. and Howard B. Lewis: *J. Pharmacol. & Exper. Therap.* **67:** 358 (Nov.) 1939.

The Local Anticonvulsive Action of Calcium Salts, Reinhard Beutner: *Proc. Soc. Exper. Biol. & Med.* **42:** 547 (Nov.) 1939.

Procaine Base Dissolved by Means of $CO_2$ and Its Mode of Action, Reinhard Beutner: *Proc. Soc. Exper. Biol. & Med.* **42:** 380 (Nov.) 1939.

Some Effects Produced in the Normal Stomach by the Ingestion of Moderate and Massive Quantities of Aluminum Hydroxide Gel, J. P. Quigley, I. H. Einsel and I. Meschan: *J. Lab. & Clin. Med.* **24:** 485 (Feb.) 1939.

Intralumen Pressures of the Pyloric Antrum and Duodenal Bulbs, I. Meschan, D. A. Brody and J. P. Quigley: *Am. J. Physiol.* **126:** P584 (July) 1939.

Exchanges of Substances in Aqueous Solution Between Joints and the Vascular System, Frederic W. Rhinelander 2d, Granville A. Bennett and Walter Bauer: *J. Clin. Investigation* **18:** 1 (Jan.) 1939.

Coronary Blood Flow in Dogs During Anoxia and Allied Conditions, Gerald T. Kent, R. Wegria and Harold D. Green: *Am. J. Physiol.* **126:** P554 (July) 1939.

Effects of Intracoronary and Intravenous Injections of Various Drugs on the Coronary Blood Flow, Norman H. Boyer, R. Wegria and Harold D. Green: *Am. J. Physiol.* **126:** P440 (July) 1939.

Certain Effects of Benzedrine, Coramine, Metrazol and Picrotoxin in Alcohol Depression, Harold W. Werner: *J. Pharmacol. & Exper. Therap.* Proc. **66:** 39 (May) 1939.

Absorption of Ergot Alkaloids, R. P. Walton, J. B. Smith and F. M. Cook: *J. Pharmacol. & Exper. Therap.* Proc. **66:** 39 (May) 1939.

Additional Experiments Relative to the Origin of Glycoside Emesis Using Cats and Dogs, Melvin Dreshach: *Am. J. Physiol.* **126:** P417 (July) 1939.

The Treatment of Ulcer of the Leg, Beverly Douglas: *Am. J. Surg.* **43:** 429 (Feb.) 1939.

Advances in the Treatment of Everyday Wounds, Beverly Douglas: *South. M. J.* **32:** 1171 (Dec.) 1939.

Concentrating Capacity of the Kidney as Revealed by Injection of Posterior Pituitary Extract, William G. Paine and Erwin E. Nelson: *Proc. Soc. Exper. Biol. & Med.* **42:** 729 (Dec.) 1939.

## Grants made in 1939:

Grant 374: W. E. Hambourger, assistant professor of pharmacology, Western Reserve University School of Medicine, $150, to investigate the pharmacology of the central nervous system.

Grant 375: Joseph Seifter, Department of Pharmacology, Western Reserve University School of Medicine, $250, to investigate the pharmacology of metal alkyls.

Grant 376: R. W. Gerard, professor of physiology, University of Chicago, $200, to investigate the therapeutic effect of pyocyanin in schizophrenia.

Grant 377: Harold D. Green, assistant professor of physiology, Western Reserve University School of Medicine, $250, to investigate the effects of the intravenous injection of various drugs on the coronary flow.

Grant 378: Carl Pfeiffer, Department of Pharmacology, University of Chicago, $200, to investigate the diuretic effect of organic mercurials.

Grant 379: H. S. Rubinstein, Sinai Hospital, Baltimore, $200, to investigate the effect of various hormones on spermatogenesis.

Grant 380: M. L. Tainter, professor of pharmacology, Stanford University School of Medicine, $250, to investigate sympathomimetic amines.

Grant 381: Henry G. Barbour, associate professor of pharmacology and toxicology, Yale University School of Medicine, $225, to investigate the effect of deuterium oxide on growth.

Grant 382: Amedeo Marrazzi, Department of Pharmacology and Therapeutics, New York University College of Medicine, $300, to investigate the action of members of the sympathomimetic group on sympathetic ganglions.

Grant 383: Meyer Bodansky, professor of pathologic chemistry, University of Texas School of Medicine, $200, to investigate the metabolism and pharmacology of paraldehyde.

Grant 384: William Bradford, associate professor of pediatrics, University of Rochester School of Medicine, $300, to investigate pertussis.

Grant 385: W. F. Hamilton, professor of pharmacology and physiology, University of Georgia School of Medicine, $125, to investigate the vasomotor response of unanesthetized animals.

Grant 386: Alrick B. Hertzman, associate professor of physiology, St. Louis University School of Medicine, $500, to investigate peripheral circulation in man with the photoelectric plethysmograph.

Grant 387: Harold C. Hodge, assistant professor of biochemstry and pharmacology, University of Rochester School of Medicine and Dentistry, $250, to investigate the action of barbiturates by the use of the photoelectric colorimeter.

Grant 388: H. E. Hoff, assistant professor of physiology; A. W. Winkler, instructor in medicine, and P. K. Smith, research assistant in pharmacology and physiology, Yale University School of Medicine, $250, to investigate the pharmacology and physiology of ions.

Grant 389: David Marine, Montefiore Hospital for Chronic Diseases, New York City, $200, to investigate iodine-bromine relations in the body.

Grant 390: C. H. McDonald, professor of physiology and pharmacology; R. W. Boyle, assistant professor of physiology and pharmacology, and Kenneth Siler, assistant professor of physiology and pharmacology, University of Arkansas School of Medicine, $250, to investigate some aspects of cardiac metabolism.

Grant 391: A. R. McIntyre, professor of physiology and pharmacology, University of Nebraska College of Medicine, $100, to investigate ouhain and cardiac muscle and metabolism.

Grant 392: Arthur H. Smith, chairman of the Department of Physiological Chemistry, Wayne University College of Medicine, $200, to investigate the rate of absorption of citric acid and citrates from the intestine, and the relative significance of these compounds as precursors of liver glycogen.

Grant 393: Arnold De M. Welch, Department of Pharmacology, Washington University School of Medicine, $300, to investigate the lipotropic activity of choline, betaine and their derivatives.

Grant 394: Harold W. Werner, assistant professor of physiology and pharmacology, University of North Dakota Medical School, $150, to investigate the effects of analeptics in alcohol depression.

Grant 395: R. W. Whitehead, professor of physiology and pharmacology, University of Colorado School of Medicine and Hospitals, $150, to investigate the influence of electrolytes in anaphylaxis.

Grant 396: Reinhard Beutner, professor of pharmacology, Hahnemann Medical College, $100, to investigate the toxicity of local anesthetics.

Grant 397: G. O. Broun, professor of internal medicine, St. Louis University School of Medicine, $250, to investigate the prevention and treatment of atherosclerosis.

Grant 398: Esther M. Greisheimer, professor of physiology, Woman's Medical College of Pennsylvania, $250, to investigate the effect of certain drugs on glycogen in the liver.

Grant 399: R. H. Rigdon, associate professor of pathology, University of Tennessee Pathological Institute, $150, to investigate the effect of sulfapyridine on staphylococcic toxin in mice.

Grant 400: Harold Hoick, associate professor of pharmacology, University of Nebraska College of Medicine, $150, to investigate the relation of sex to drug action.

Grant 401: Abraham White, assistant professor of physiologic chemistry, Yale University School of Medicine, $200, to investigate the hormones of the anterior pituitary gland.

Grant 402: Harry Beckman, professor of pharmacology, Marquette University School of Medicine, $250, to investigate the prophylaxis of malaria.

The following grants were issued before Jan. 1, 1939. In some cases the grants have expired and unexpended balances remain, or the work is not yet completed or not yet published:

Grant 164: E. L. Jackson, associate professor of pharmacology, Emory University School of Medicine, $200, to investigate the antagonism between sodium barbital and insulin.

Grant 211: John G. Reinhold, Department of Public Health, Philadelphia General Hospital, $250, to investigate the action of aminoacetic acid (glycine) in progressive muscular dystrophy.

Grant 223: Clinton H. Thienes, professor of pharmacology, and Lawrence E. Detrick, Department of Pharmacology, University of Southern California School of Medicine, $200, to investigate withdrawal phenomena in morphine addicted animals.

Grant 232: George R. Cowgill, associate professor of physiologic chemistry, Yale University School of Medicine, $250, to investigate the heart in vitamin B deficiency.

Grant 236: C. W. Greene, professor of physiology and pharmacology, University of Missouri School of Medicine, $100, to investigate the pharmacology of the so-called specific coronary dilator drugs.

Grant 238: Roy R. Kracke, professor of pathology, Emory University School of Medicine, $250, to investigate the effect of the oxidation products of aminopyrine and related drugs on the leukocyte counts of rabbits.

Grant 248: Fred C. Koch, chairman of the Department of Physiological Chemistry and Pharmacology, University of Chicago, $250, to investigate the male sex hormone.

Grant 249: J. Percy Baumberger, associate professor of physiology, Stanford University Department of Physiology, $200, to investigate the occurrence and oxidation reduction potential of pigments in tumor cells.

Grant 251: Bernard Fantus, professor of therapeutics, University of Illinois College of Medicine, $100, to investigate the titration of the antitoxic value of serum of patients who have received tetanus antitoxin.

Grant 261: Robert P. Walton, professor of pharmacology, University of Mississippi School of Medicine, $100, to investigate the absorption of drugs through the oral mucosa.

Grant 263: H. A. Shoemaker, associate professor of biochemistry and pharmacology; C. E. Clymer, professor clinical surgery, and Henry H. Turner, University of Oklahoma School of Medicine, $150, to investigate the blood cholesterol and iodine value in thyroid disease and their alteration by treatment.

Grant 264: Detlev W. Bronk, Johnson professor of biophysics, University of Pennsylvania School of Medicine, $200, to investigate the action of various drugs on the autonomic centers.

Grant 278: William H. Lewis Jr., assistant clinical professor of medicine, and Arthur C. DeGraff, professor of therapeutics, New York University College of Medicine, $150, to investigate the function of the heart in relation to age.

Grant 280: John P. Peters, professor of medicine, Yale University School of Medicine, $200, to investigate by means of intravenous pyelography the state of the ureters and kidneys in a large series of patients after delivery and subsidence of acute signs of toxemia.

Grant 297: Melvin Dresbach, Harvard Medical School, $250, to investigate the emetic effect of some of the digitalis bodies.

Grant 298: Kenneth W. Thompson, Department of Physiology, Yale University School of Medicine, $200, to investigate the effects of the thyroid stimulating hormone.

Grant 302: Mary E. Collett, Flora Stone Mather College, Western Reserve University, $200, to investigate the effect of the female sex hormone on the hot flashes and the basal metabolism of ovariectomized women.

Grant 305: Beverly Douglas, assistant dean and associate professor of surgery, Vanderbilt University School of Medicine, $250, to investigate the pneumatic (transparent rubber jacket) system of treating extensive wounds.

Grant 306: Edwards A. Park, professor of pediatrics, Johns Hopkins University School of Medicine, $75, to investigate rickets in the rat and the effect of solution of parathyroid on the circulation of the bone.

Grant 307: Ephraim Shorr, assistant professor of medicine, Cornell University Medical College, $200, to investigate methods of determining adequate dosage of corpus luteum hormone for the human being.

Grant 308: Claus W. Jungeblut, professor of bacteriology, Columbia University College of Physicians and Surgeons, $250, to investigate the relation of vitamin C to diphtheria.

Grant 311: Clarence P. Berg, assistant professor of biochemistry, State University of Iowa, $250, to investigate amino acids.

Grant 314: F. C. Koch, chairman Department of Physiological Chemistry and Pharmacology, University of Chicago, $250, to investigate provitamin D.

Grant 315: Erwin E. Nelson, professor of pharmacology, Tulane University School of Medicine, $125, to investigate some actions of the pituitary.

Grant 316: Edward Van Liere, professor of physiology, West Virginia University School of Medicine, $100, to investigate the action of various drugs on gastric motility.

Grant 327: Eben J. Carey, dean and professor of anatomy, Marquette University School of Medicine, $250, to investigate the pharmacologic agents that influence the histologic signs of nervous action.

Grant 329: Roberta Hafkesbring, associate professor of physiology, Woman's Medical College of Pennsylvania, $250, to investigate the effects of sodium barbital, sodium amytal and pentobarbital sodium on blood pressure, respiration and kidney function.

Grant 332: J. P. Simonds, department of pathology, Northwestern University Medical School, $200, to investigate the selective activity of toxic substances on the kidneys.

Grant 333: Owen S. Gibba, chief of Pharmacological Division, University of Tennessee College of Medicine, $180, to investigate the toxicity of morphine and scopolamine on rats.

Grant 343: Morton McCutcheon, associate professor of pathology, University of Pennsylvania School of Medicine, $150, to investigate chemotaxis, especially of leukocytes.

Grant 349: Garnett Cheney, associate clinical professor of medicine, Stanford University School of Medicine, $250, to investigate vitamin K deficiency in chick hemophilia.

Grant 350: James T. Culbertson, assistant professor of bacteriology, Columbia University College of Physicians and Surgeons, $300, to investigate sulfanilamide.

Grant 351: Eugene B. Ferris, assistant professor of medicine, University of Cincinnati College of Medicine, $200, to investigate the administration of human serum.

Grant 355: Peter K. Knoefel, associate professor of pharmacology, University of Louisville School of Medicine, $150, to investigate the action of amines, of the epinephrine series and of related substances on the central nervous system.

Grant 356: John B. Lagen, research associate in medicine, University of California Medical School, $150, to investigate the potassium and sodium ions in the blood of asthmatic patients and in anxiety states.

Grant 357: William B. Lyons, assistant professor of anatomy, University of California Medical School, $250, the standardization of lactogenic hormone.

Grant 358: R. J. Main, associate professor of physiology and pharmacology, Medical College of Virginia, $100, to investigate the effects of epinephrine and amphetamine on alveolar carbon dioxide in man.

Grant 359: F. C. McLean, professor of pathology and physiology, University of Chicago, $125, to investigate the effects of the growth hormone of the anterior pituitary lobe on the growth of long bones.

Grant 360: F. C. McLean, professor of pathology and physiology, University of Chicago, $125, to investigate the mode of action of dihydrotachysterol (A. T. 10).

Grant 361: Sergius Morgulis, professor of biochemistry, University of Nebraska College of Medicine, $100, to investigate the relationship between muscular dystrophy and gonadal atrophy.

Grant 362: James M. Orten, assistant professor of physiologic chemistry, Wayne University College of Medicine, $150, to investigate the effect of copper and certain other inorganic salts on the hypoglycemic activity of insulin.

Grant 363: Louis A. Toth, Department of Physiology, Tulane University of Louisiana School of Medicine, $160, to investigate the influence of low oxygen on urine secretion.

Grant 365: Harold W. Werner, assistant professor of physiology and pharmacology, University of North Dakota Medical School, $250, to investigate the effects of stimulants on rabbits depressed with ethyl alcohol.

Grant 366: George W. Paff, Department of Anatomy, Long Island College of Medicine, $75, to investigate the effect of digitalis on the heart.

Grant 367: Simon Benson, dean of pharmacy, Ferris Institute, $100, to investigate the therapeutic effects of skin counterirritants.

Grant 370: Harald G. O. Holck, associate professor of pharmacology, University of Nebraska College of Pharmacy, $250, to investigate the possible effect of aging on the strength of digitalis preparations.

Grant 371: H. N. Cole, clinical professor of dermatology and syphilology, Western Reserve University School of Medicine, $75, to investigate arsphenamine dermatitis.

Grant 372: Charles Weiss, associate professor of research medicine, University of California Medical School, $200, to investigate the immunology of staphylococcic infections.

Grant 373: Morris Rosenfeld, associate in pharmacology and experimental therapeutics, Johns Hopkins University School of Medicine, $400, to investigate the hormone of the posterior pituitary gland (an ultracentrifugal study).

## TREASURER'S REPORT

### Report of the Treasurer of the American Medical Association for the Year Ending December 31, 1939

| | | |
|---|---|---|
| Investments (At Cost) as at January 1, 1939 | | $2,421,204.25 |
| Less: | | |
| Bonds Matured or Called | 71,940.78 | |
| Investments as at December 31, 1939 | | $2,349,263.47 |
| Balance for Investment January 1, 1939 | $ 43,076.98 | |
| Interest Earned on Investments—Year 1939 | 84,938.91 | |
| Uninvested Funds December 31, 1939 | | 128,015.89 |
| Invested and Uninvested Funds as at December 31, 1939 | | $2,477,279.36 |

### DAVIS MEMORIAL FUND

| | | |
|---|---|---|
| Balance in Fund January 1, 1939 | | $7,225.92 |
| Interest Earned on Bank Balance—Year 1939 | 108.78 | |
| Funds on Deposit as at December 31, 1939 | | $ 7,334.70 |

HERMAN L. KRETSCHMER, Treasurer.

## AUDITOR'S REPORT

January 30, 1940.

*To the Board of Trustees,*
*American Medical Association, Chicago, Illinois.*

*Dear Sirs:*

We have examined the Balance Sheet of the American Medical Association, Chicago, Illinois, as at December 31, 1939, and the Income Account for the year ended on that date, have reviewed the system of internal control and the accounting procedures of the Association and, without making a detailed audit of the transactions, have examined or tested accounting records and other supporting evidence, by methods and to the extent we deemed appropriate except as hereinafter stated.

The cash and bank balances have been confirmed by count or by certificates from the depositaries.

The investments in U. S. Government and other marketable securities were confirmed by acknowledgement from the custodian, Continental Illinois National Bank and Trust Company of Chicago.

We did not independently confirm the accounts receivable by communication with the debtors. The accounts receivable were reviewed as to age and collectibility and, in our opinion, the balances are fully realizable. We reviewed the plan and system of control adopted for inventory taking but we did not observe the taking of the inventories nor did we make tests of the physical existence of the quantities recorded.

Expenditures charged to property and equipment accounts during the year, in our opinion, were properly capitalized as representing additions or improvements. The provision for depreciation for the year appears to be adequate.

In our opinion, the accompanying Balance Sheet and related statement of Income Account present fairly the position of the American Medical Association at December 31, 1939, and the results of the operations for the year, subject to the exceptions noted in paragraph four and the following observations:

(a) In accordance with the established practice of the Association, the accounts as stated do not include (a) unrecorded assets in respect of accrued interest on bond investments, and membership dues unpaid; and (b) provision for accrued property taxes for the year 1939, and sundry unpaid bills.

(b) Subscriptions paid in advance are stated at an estimated amount which is based on cash received in December 1939, on account of 1940 subscriptions. This procedure conforms to the method used in prior years.

(c) Advance payments on publications include an estimated amount ($124,528.90) for prepared subscriptions to HYGEIA, and the amount ($27,000.44) received in advance for January, 1940, advertising, directory information sales and service.

(d) The buildings of the Association are carried at reproduction values as determined by an appraisal by Holabird and Root as at December 31, 1936, less depreciation accrued to the date of the Balance Sheet. The portion of the depreciation provision for the year applicable to the increase in book value which was recorded at December 31, 1936, as determined by the appraisal, has been charged against the complementary credit included in the Net Worth of the Association in that connection.

(e) We have received a letter from Messrs. Loesch, Scofield, Loesch and Burke, attorneys for the Association, regarding litigation pending against the Association or its officers at December 31, 1939, which states that the following lawsuits had been filed:

Dr. Jean Paul Fernel—$1,000,000.00 (libel)
Robert Wadlow—$150,000.00 (libel)
Hirestra Laboratories, Inc.—$3,000,000.00 (in equity, and also at law)
Wm. E. Balsinger—$100,000.00 (libel)
John R. Brinkley—$250,000.00 (libel—under appeal)
United States of America (conspiracy in restraint of trade—under appeal)

The attorneys state that in their opinion all of these suits will be defeated.

Fidelity insurance is carried against the undermentioned officers and employees, in the amounts stated:

| | |
|---|---|
| Dr. Olin West, Secretary and General Manager | $10,000.00 |
| Dr. Herman L. Kretschmer, Treasurer | 10,000.00 |
| E. A. Hoffman, Cashier | 10,000.00 |
| J. E. Hartigan, Assistant Cashier | 2,000.00 |
| Sundry Employees (thirteen, $1,000.00 each) | 13,000.00 |
| Total Fidelity Insurance | $45,000.00 |

We have pleasure in reporting that the books are well maintained and that every facility was afforded us for the proper conduct of the examination.

Yours truly,

PEAT, MARWICK, MITCHELL & Co.

## INDEX TO STATEMENTS


| | Exhibit |
|---|---|
| Balance Sheet, as at December 31, 1939 | "A" |
| Income Account, for the year ended December 31, 1939 | "B" |
| | **Schedule** |
| Journal Operating Expenses, for the year ended December 31, 1939 | "1" |
| Association and Miscellaneous Expenses, for the year ended December 31, 1939 | "2" |


## EXHIBIT "A"

### BALANCE SHEET AS AT DECEMBER 31, 1939

| | | | |
|---|---|---|---|
| **ASSETS:** | | | |
| **Property and Equipment:** | | | |
| **Real Estate:** | | | |
| Land—at less than cost (see note) | | | $ 288,773.98 |
| Buildings—at reproduction cost new (as appraised by Holabird & Root at December 31, 1936), plus additions since at cost | $1,313,530.42 | | |
| Less—Reserve for Depreciation | 474,727.02 | | 838,803.40 |
| | | | 1,127,577.38 |
| **Equipment—at cost:** | | | |
| Machinery | $403,187.38 | | |
| Less—Reserve for Depreciation | 251,862.47 | 151,324.91 | |
| Type and Factory Equipment | 59,803.34 | | |
| Less—Reserve for Depreciation | 45,271.68 | 14,531.66 | |
| Furniture and Office Equipment | 163,384.36 | | |
| Less—Reserve for Depreciation | 82,916.06 | 80,468.30 | |
| Chemical Laboratory | 17,467.28 | | |
| Less—Reserve for Depreciation | 8,902.89 | 8,564.39 | |
| Type Metal (based on physical inventory September 1, 1939) | | 21,367.90 | 276,257.16 |
| Total Property and Equipment | | | 1,403,834.54 |
| **Investments—at Cost:** | | | |
| U. S. Government Securities | | 1,553,723.06 | |
| Railroad, Municipal and Public Utility Bonds | | 795,540.41 | 2,349,263.47 |
| Cash held by Treasurer for Investment | | | 128,015.89 |
| Cash in Bank and on hand | | | 166,339.59 |
| **Accounts Receivable:** | | | |
| Advertising | | 72,882.09 | |
| Co-operative Medical Advertising Bureau | | 14,226.54 | |
| Reprints | | 3,406.33 | |
| Payroll Taxes (Federal and State)—Refund Claims filed or action pending | | 79,058.22 | |
| Miscellaneous—Deposits, Advances, etc. | | 10,664.91 | 180,238.09 |
| Inventories of Materials, Supplies, Work in Progress, and Publications | | | 95,242.79 |
| Expenditures on Publications in Progress | | | 100,190.48 |
| Prepaid Expenses—Insurance, etc. | | | 6,574.35 |
| Total | | | $4,429,699.20 |

Note: Book Value of Land was reduced $40,000.00 as at December 31, 1933, by official action of Board of Trustees. This action was reported to House of Delegates.

| | | | |
|---|---|---|---|
| **LIABILITIES:** | | | |
| **Accounts Payable:** | | | |
| Co-operative Medical Advertising Bureau | | | $ 15,367.29 |
| Miscellaneous | | | 22,246.70 |
| Total Accounts Payable | | | 37,613.99 |
| Subscriptions Paid in Advance | | | 195,494.90 |
| Advance Payments on Publications | | | 151,529.34 |
| **Net Worth:** | | | |
| Association Reserve Fund | | $ 350,000.00 | |
| Building Reserve Fund | | 400,000.00 | |
| Retirement Reserve Fund | | 50,000.00 | |
| **Capital Account:** | | | |
| Amount thereof as at December 31, 1938 | $3,048,652.01 | | |
| Add: | | | |
| Net Income for the year ended December 31, 1939 | 114,798.77 | | |
| Payroll Tax Refund Claims (Federal and State) applicable to year 1938 | 30,671.60 | | |
| Adjustment of Type Metal Account, resulting from Physical Inventory as at September 1, 1939 | 10,561.66 | | |
| | 3,204,684.04 | | |
| Deduct—Amounts transferred during year to Building Reserve Fund ($50,000.00) and Retirement Reserve Fund ($25,000.00) | 75,000.00 | 3,129,684.04 | |
| Increase in Book Value of Buildings—per Appraisal | 124,481.59 | | |
| Deduct—Depreciation applicable thereto for the years 1937 to 1939, inclusive | 9,104.66 | 115,376.93 | |
| Net Worth, December 31, 1939 | | | 4,045,060.97 |
| Total | | | $4,429,699.20 |

## EXHIBIT "B"

### INCOME ACCOUNT

FOR THE YEAR ENDED DECEMBER 31, 1939

| | | |
|---|---|---|
| Journal: | | |
| Gross Earnings: | | |
| Fellowship Dues and Subscriptions | | $ 731,882.02 |
| Advertising | | 908,790.58 |
| Jobbing | | 5,731.79 |
| Reprints | | 686.26 |
| Books | | 9,692.31 |
| Insignia | | 5,234.24 |
| Miscellaneous Sales | | 18,836.79 |
| Gross Earnings from Journal | | 1,700,853.99 |
| Operating Expenses—"Schedule "1" | | 994,030.97 |
| Net Earnings from Journal | | 706,823.02 |
| Association Income: | | |
| Income from Investments | $ 84,938.91 | |
| Net Gain on Investments Sold or Called | 1,234.22 | |
| Miscellaneous Income | 11,739.70 | 97,912.83 |
| Gross Income | | 804,735.85 |
| Association Expenses—Schedule "2" | 484,052.06 | |
| Miscellaneous Expenses—Schedule "2" | 205,885.02 | 689,937.08 |
| Net Income | | $ 114,798.77 |

## SCHEDULE "1"

### JOURNAL OPERATING EXPENSES

FOR THE YEAR ENDED DECEMBER 31, 1939

| | | |
|---|---|---|
| Wages and Salaries | | $ 487,342.36 |
| Editorials, News and Reporting | | 9,767.08 |
| Paper—Journal Stock | | 224,813.66 |
| Paper—Miscellaneous | | 4,549.09 |
| Electrotype and Engravings | | 15,589.20 |
| Binding | | 654.95 |
| Ink | | 7,496.38 |
| Postage—First Class | | 41,702.50 |
| Postage—Second Class | | 64,721.94 |
| Journal Commissions | | 17,634.21 |
| Collection Commissions | | 787.06 |
| Discounts | | 33,137.49 |
| Express and Cartage | | 4,791.99 |
| Exchange | | 2,145.55 |
| Office Supplies | | 4,338.50 |
| Telephone and Telegraph | | 3,427.54 |
| Office Printing | | 13,496.99 |
| Power and Light | | 10,391.06 |
| Factory Supplies | | 13,585.84 |
| Repairs and Renewals—Machinery | | 3,945.78 |
| Insurance and Taxes | | 25,890.14 |
| Building Expenses | | 42,671.18 |
| Fuel | | 7,929.83 |
| Payroll Taxes | | 148.59 |
| Miscellaneous Operating Expenses | | 24,294.78 |
| Bad Debt Losses, and Loss on Sale of Equipment—including Loss on Type Metal ($873.12) | | 1,225.76 |
| | | 1,066,479.90 |
| Depreciation (computed on diminishing balances): | | |
| Building (cost basis) | $18,496.73 | |
| Machinery | 7,964.47 | |
| Type and Factory Equipment | 764.82 | |
| Furniture and Equipment | 4,235.17 | 31,461.19 |
| Total | | 1,097,941.09 |
| Deduct—Proportion of Overhead Expenses charged to other Publications and Departments | | 103,910.12 |
| Total Journal Operating Expenses | | $ 994,030.97 |

## SCHEDULE "2"

### ASSOCIATION AND MISCELLANEOUS EXPENSES

FOR THE YEAR ENDED DECEMBER 31, 1939

| | |
|---|---|
| Association Expenses: | |
| Association | $109,594.05 |
| Health Education | 38,425.48 |
| Pharmacy and Chemistry | 48,348.59 |
| Chemical Laboratory | 25,681.64 |
| Medical Education and Hospitals | 76,504.08 |
| Therapeutic Research | 6,807.06 |
| Legal Medicine and Legislation | 37,552.46 |
| Bureau of Investigation | 15,685.66 |
| Bureau of Medical Economics | 33,960.56 |
| Council on Foods | 22,905.13 |
| Physical Therapy | 18,182.86 |
| Council on Industrial Health | 11,019.06 |
| Bureau of Association Exhibits | 38,934.67 |
| Laboratory Depreciation (5% on diminishing balance) | 450.76 |
| Total Association Expenses | $484,052.06 |
| Miscellaneous Expenses: | |
| Legal and Investigation | $131,420.48 |
| Sundry Publications | 74,464.54 |
| Total Miscellaneous Expenses | $205,885.02 |

## REPORT OF THE JUDICIAL COUNCIL

*To the Members of the House of Delegates of the American Medical Association:*

The problems coming before the Judicial Council during the past year have been largely organizational and have especially involved membership and Fellowship in the national body. Difficult situations arising because of wide variation in the qualifications and classifications of members existing in the constitutions of component and constituent societies have been referred to the Council and the attempt has been made to adjust them fairly within constitutional laws. It has not been possible always to do this under present by-laws.

### The Need for Uniformity in Basic Organizational Laws

The plan under which the one essential organization of physicians in the United States was effected is, in practically all important particulars, similar to the form of government of the United States. The component county medical society is the basic element and is created by authorization of the constituent state or territorial association under charter. The constituent state and territorial medical associations constitute the federacy which is the American Medical Association. In accordance with established democratic principle, the component county societies are the judges of their own membership, which, when selected, constitutes the membership of the constituent state and territorial associations, and of the American Medical Association after the necessary procedures of reporting and enrolment have been completed in keeping with the provisions of organizational law.

It was originally and is now the intent of that law that the requirements for eligibility for membership and the procedures involved in the election of members should be uniform in nature in all counties, states and territories and that representation in our policy making and legislative bodies should be in strict accord with established democratic principles. It always has been the intent of our organizational law that jurisdiction should be definitely established and strictly observed, that the rights and privileges of membership should be clearly defined and faithfully preserved, that equal representation should be insured and that the objectives of all organizational units should be identical in nature. Nearly forty years ago the present plan of medical organization in the United States was effected, and through its operation an unequaled record of achievement has been made. Its essential soundness and effectiveness have been clearly demonstrated and the possibilities for further worthy accomplishment are clearly evident if the basic elements of the plan are preserved and if the same objectives are faithfully pursued.

As time has gone on there has developed a tendency toward the initiation of changes in the organizational laws of some component societies and constituent associations on an individual basis. This may represent an effort to meet new conditions created by social change or to deal with problems of a purely local and perhaps transient nature. It may mean progress, but it is possible that it may result in confusion and consequent weakening of the essential plan of organization under which the cause of scientific medicine has been so splendidly promoted.

The Judicial Council respectfully suggests that there is need for careful examination of the constitutions and by-laws of component societies and constituent associations and of the Constitution and By-Laws of the American Medical Association with a view to the preservation of all the proved sound principles of the present plan of organization as well as to the adoption of new sound principles that it may be desirable to adopt in order to meet new conditions.

### Membership and Membership Classifications

The door to membership in the component county medical society is also the door to membership in the constituent state medical association and in the American Medical Association.

It is reasonable to assume that any well qualified and ethical physician eligible for membership in a county society in one state should be eligible for membership in a county society in another state except as his eligibility might be affected by the provisions of state laws, but the fact is that the terms under which members are accepted are not uniform. In most instances it is required that applicants for membership in county societies shall be legally registered in the counties in which they seek society membership. In some counties and states physicians who are not legally registered—not licensed—in such counties and states are taken into membership and enjoy the same rights and privileges as other members who are licensed and registered. There may be serious question as to the wisdom of this procedure from the standpoint of society interest as well as from the standpoint of strictly legal considerations.

There is great lack of uniformity in the various membership classifications of county and state societies. Among these classifications are regular membership, active membership, associate membership, affiliate membership, honorary membership, retired membership, intern membership and nonresident membership. Definitions of these classifications are not uniform. Honorary membership in one society may be equivalent to retired membership in another, and there are similar differences with respect to other classifications. There is some lack of uniformity with respect to official procedures followed in submitting membership reports to the Secretary of the American Medical Association.

The Judicial Council respectfully suggests that constituent state and territorial associations and component county societies consider the possibility of adopting identical membership classifications and uniform procedures in reporting the names of those eligible for enrolment as members of the American Medical Association.

In this connection the Council desires to bring to the attention of the House of Delegates a matter of recent development that has been brought before it. It seems that certain specialty boards require that applicants for certification shall be members of the American Medical Association. There are many well qualified physicians not eligible for active membership in component and constituent societies who are associate members of such societies but are not reported for enrolment as members of the American Medical Association. Apparently these physicians are considered by some of the specialty boards as ineligible for certification. To many of these physicians the doors to membership and Fellowship in the American Medical Association are now closed and should be opened, or the sections of the By-Laws dealing with Associate Fellowship should be amended to provide a place in organized medicine for such of them as by character and attainment have proved worthy. The Judicial Council recommends that it be directed by the House of Delegates to investigate further the conditions present in the matter of membership in the various component and constituent societies and in that of membership and Fellowship in the American Medical Association and to report, with recommendations, to the House of Delegates at the 1941 annual session.

### Revision of the Constitution and By-Laws

The Judicial Council has given some thought to a general survey of the Constitution and By-Laws of the American Medical Association with a view to possible amendments or revision. While there are not many points of desirable change, there are a few sections which can be amplified to cover existing needs not now provided for and a few others which need clarification. The Judicial Council recommends that it be directed to continue its study and to report to the House of Delegates at the annual session in 1941.

### Rearrangement and Rewording of the Principles of Medical Ethics

For three or four years there has seemed to be a growing desire on the part of a number of the members of the Association to have the Principles of Medical Ethics revised by making the principles more liberal, specific and explanatory and by excepting physicians from the application of some features or to abandon the Principles of Medical Ethics as being behind the times and outmoded. The subject has been presented in the House of Delegates several times during the past few years but without favorable recommendations by the reference committees to which resolutions were referred and without approval or acceptance by the House. At the annual session of the Association held in St. Louis in 1939, resolutions were presented to the House of Delegates and referred to the Reference Committee on Amendments to the Constitution and By-Laws and to the Judicial Council. The Council, not as a committee but for the purpose of furnishing information and advice, sat with the reference committee. The resolutions read as follows: "*Resolved*, That the Speaker of this House of Delegates appoint a committee of five Fellows of the American Medical Association to study the Principles of Medical Ethics and the form of the code of ethics of the legal profession, having in mind the rearrangement of our Principles of Medical Ethics for continuity, the rewording for clarity, the addition of a commentary following each principle to illustrate the intent and the quoting of relating decisions of the Judicial Council; and be it further *Resolved*, that this committee be directed to report its recommendations to the 1940 session of the House of Delegates of the American Medical Association." The report of the Reference Committee on Amendments to the Constitution and By-Laws, to which this resolution was referred, was as follows: "Resolutions on Rearrangement and Rewording of the Principles of Medical Ethics: Your reference committee feels that any proposed change in the Principles of Medical Ethics of the American Medical Association is a matter for serious consideration and that such a study as the resolutions demand should be done by a body of the American Medical Association which has to do with the administration of the Principles of Medical Ethics in the last analysis. Your reference committee therefore recommends that these resolutions offered by the California delegation be referred to the Judicial Council for study and that the Judicial Council report to the House of Delegates its conclusions at the session of 1940."

Attention is usually called by those who seek a rewriting of the Principles of Medical Ethics to the fact that the present principles were formulated in 1903 and that times have changed since then. The argument is presented that, to keep up with progress in other fields of endeavor as well as with the science of medicine, the ethics of medicine should change and become up to date. It is either forgotten or not realized by these advocates of change that the Principles of Medical Ethics is but a statement of the underlying principles of conduct which apply to the relations of every physician with his patients, with the public and with his fellow doctors of medicine. The principles are not laws to govern actions in detail but to guide conduct. The basic principle underlying all the ramifications of a doctor's professional life is stated in the opening sentences of the published Principles of Medical Ethics: "A profession has for its prime object the service it can render to humanity; reward or financial gain should be a subordinate consideration. The practice of medicine is a profession. In choosing this profession an individual assumes an obligation to conduct himself in accord with its ideals." That has been the basic principle of medical ethics since the time of Hippocrates. Medicine's methods of practice may change, its economics may change, its science may change but its principles of ethics do not change any more than do the basic principles of the Christian religion. Government and law may disrupt and negate the operation of our Principles of Medical Ethics for a time or in part but it always will remain the principles of right conduct for our profession and will prevail just as long as government and law permit.

The Judicial Council has had a large correspondence with physicians seeking information concerning ethical problems. Many of them evidently have not been trying to be ethical but have been seeking to discover by some means, such as sophisticated reasoning or hair-splitting verbiage, how far from ethical principles they can go and still be considered ethical.

Such physicians are trying to fit the Principles of Medical Ethics to an action they desire to take rather than to fit their action to the Principles.

The Judicial Council does not believe that the present wording and arrangement of the Principles of Medical Ethics cannot be improved, but it does believe that the present is not the time to do the rewriting. There is at present so much turmoil in medical organization and its relation to government that it seems wise to let the muddied waters settle before any consideration is given to so fundamental a feature of our organization as our Principles of Medical Ethics.

Meanwhile, any one seeking information or explanation concerning our present published Principles of Medical Ethics can find such analysis in the American Medical Association's publication by the Bureau of Medical Economics entitled Economics and the Ethics of Medicine.

### Patents and Perquisites

At the St. Louis session the Board of Trustees in a supplementary report to the House of Delegates discussed the subject of medical patents. On recommendation of the Reference Committee on Legislation and Public Relations the matter was referred to the Judicial Council. The Principles of Medical Ethics, chapter III, article I, section 5, declares it to be "unprofessional to receive remuneration from patents for surgical instruments or medicines." The result of this prohibition has been, at times, to prevent or deter the manufacture and sale of an instrument or medicine of use and value to a patient to such a degree that its availability to a patient becomes a matter of undue hardship or an impossibility. This direct prohibition of the receipt of any remuneration from a patent by a physician does not prohibit the act of patenting but does distinctly prevent an ethical physician from obtaining any monetary return because of the patent. The section is one of the very few sections in the Principles of Medical Ethics which is a distinct law rather than a statement of a principle. Patents in general, whether in industry, science or medicine, have been under national discussion for several years in the attempt to solve the problems of the many difficulties in research because of them. Up to the present time, no satisfactory solution has been found. Underlying patents have frequently been found to exist by research organizations after much time and money has been spent, vitiating all the work of the organization unless a license can be obtained from the original patentee. Ten years ago at the direction of the House of Delegates the Judicial Council made an extensive survey of professional opinion in the United States as to the advisability of change in the section covering patents and found the majority opinion advising against such change. This past year the Council has had a number of letters of inquiry and of protest.

The Judicial Council has given extended consideration as to how to maintain the principle of benefit to humanity as the prime consideration in our Principles of Medical Ethics and at the same time to satisfy the reasonable demand that a physician, having given time and money for the benefit of humanity, shall be permitted to protect himself against exploitation by others and to receive reimbursement for his expenditure.

Not only are surgical instruments, appliances and medicines patentable but methods or processes also may be patented. It is in this field of research that the greatest harm to the principle of the benefit to humanity exists and the greatest difficulties to be overcome are found.

Although the Judicial Council has spent many hours and many words over the problem, the Council is not ready as yet to report to the House of Delegates, but it hopes that such progress has been made as will permit the submission of a supplementary report during this annual session.

Respectfully submitted.

George Edward Follansbee, Chairman.
Walter F. Donaldson.
Holman Taylor.
John H. O'Shea.
Edward R. Cunniffe.

## REPORT OF THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

*To the Members of the House of Delegates of the American Medical Association:*

1. *Practice of Medicine in Hospitals by Radiologists, Pathologists, Anesthetists and Physical Therapists.*—In response to resolutions adopted by the House of Delegates at San Francisco, the Council desires to report that the Inter-Society Committee on Economics of Radiology has prepared a study of the financial relationships between radiologists and hospitals which appears to cover this subject adequately so far as radiology is concerned. Owing to the pressure of work in connection with the National Health Program and similar activities, the Bureau of Medical Economics and the Council on Medical Education and Hospitals are not yet in a position to make a final report on the practice of pathology, anesthesia and physical therapy.

2. At the meeting of the Association of American Medical Colleges in Cincinnati, Oct. 23-25, 1939, following vigorous criticism of the Council on Medical Education and Hospitals by Dr. B. C. MacLean, director, Strong Memorial Hospital, Rochester, N. Y., Dr. Robin C. Buerki, director of study, Commission on Graduate Medical Education, Chicago, and Dr. Willard C. Rappleye, dean, Columbia University College of Physicians and Surgeons, New York, it was voted that the medical colleges should establish independently of the Council their own machinery for the investigation and classification of internships.

In the light of these efforts on the part of other organizations to assume the functions which for thirty-five years have been performed by the Council on Medical Education and Hospitals of the American Medical Association, it would seem to be desirable that the House of Delegates should at this time clearly indicate to the public and to the medical profession what are its responsibilities in the field of medical education and what are the channels through which these responsibilities are to be discharged.

3. During the past year the Council has lost three members of its field staff. Dr. Stuart P. Cromer resigned to become dean of the University of Arkansas School of Medicine. Dr. Oswald N. Andersen accepted a call to become assistant superintendent of the Barnes Hospital in St. Louis. Dr. Hamilton H. Anderson accepted an appointment as professor of pharmacology in the Peiping Union Medical College in China.

4. *Current Activities of the Council.*—A. Undergraduate medical education: (*a*) In conformity with the action taken by the Canadian Medical Association at Halifax in June 1938, the Council voted at its meeting on May 13, 1939, that after Jan. 1, 1945, the Canadian medical schools will be included in the Council's classification of medical schools only at their own request.

(*b*) Since the Council recommended in 1938 that the minimum requirement for admission to medical schools should be three years of college work and since in 1939 2.1 per cent of all candidates accepted had actually completed three years or more in college, the Council voted at its meeting Dec. 10, 1939, to omit from its list of accredited colleges those institutions which are unable to satisfy this requirement.

B. Graduate medical education: (*a*) One of the most important and extensive phases of graduate medical education is that which deals with the preparation of specialists and which is carried on very largely through institutional apprenticeships. The Council has for many years listed residencies in the specialties which offer a satisfactory program of instruction. Last year this list was broadened so as to include similar opportunities designated as fellowships. Since we now have certifying boards in most of the specialties of medicine, it is obvious that instruction in these fields must be of such a character as to satisfy the requirements of the certifying boards.

(*b*) During the past year the Council has undertaken a program of cooperation with the various specialty boards looking toward the establishment of uniform standards in the field of graduate medical education and the elimination of unnecessary

duplication in the inspection of hospitals which undertake to train residents in the various specialties. Negotiations have already been completed or are under way with the following boards:

American Board of Anesthesiology.
American Board of Dermatology and Syphilology.
American Board of Internal Medicine.
American Board of Obstetrics and Gynecology.
American Board of Orthopaedic Surgery.
American Board of Pathology.
American Board of Pediatrics.
American Board of Psychiatry and Neurology.
American Board of Radiology.
American Board of Urology.

Official information is secured from hospitals on forms printed in triplicate so that one copy may be retained by the institution, one copy by the Council and one by the special examining board concerned. The actual inspection of the hospitals is carried out by members of the Council's staff. Copies of the reports of these inspections are likewise transmitted to the examining boards. It is expected that, in the final evaluation of residencies and fellowships, the conclusions of the Council and of the boards will be identical so that it may be said that any institution approved by the Council will be equally acceptable to the specialty boards.

5. A. *Publications.*—Since the last annual session the Council has contributed to the following special numbers of THE JOURNAL:

Medical Education, Aug. 26, 1939.
Hospital Facilities for the Care of Tuberculosis, March 2, 1940.
Hospital Service in the United States, March 30, 1940.
Medical Licensure, April 27, 1940.

B. At the St. Louis session of the American Medical Association an abstract was presented of the Council's survey of "Hospitals and Medical Care in Mississippi." The completed report of that study was published and may be found in the Proceedings of the House of Delegates for the 1939 session.

C. In January of this year the Council was able to publish a report prepared by Dr. Herman G. Weiskotten, dean of Syracuse University; Rev. Alphonse M. Schwitalla, S.J., dean of St. Louis University School of Medicine; Dr. William D. Cutter, Secretary of the Council, and Dr. Hamilton H. Anderson of the staff of the Council, covering the Survey of Medical Schools which was begun in 1934. This book has been widely distributed and has elicited favorable comment.

D. The Council has completed a survey of one portion of the field of graduate medical education; namely, that phase which offers to practitioners opportunities for instruction in localities which are of no great distance from their homes. A report of this study, which was conducted by Dr. Hamilton H. Anderson, was published in March and copies will be available at the New York session.

6. *Intern Health.*—At the request of the Board of Trustees, a survey has been made of the health of interns. Hospitals were asked to report the number of interns who during a three year period were obliged to discontinue their service on account of ill health, and also the corresponding number of those who were obliged to discontinue their service on account of tuberculosis. The final analysis of these data will very likely be available at the time of the annual session.

7. It is a satisfaction to record that during the past year conferences have been held between the Board of Trustees of the American Medical Association and the Board of Regents of the American College of Surgeons, and also between members of the staff of the Council on Medical Education and Hospitals and the administrative staff of the American College of Surgeons. These conferences have resulted in closer cooperation and collaboration in the collection and publication of hospital statistics. In the Hospital Number of THE JOURNAL (March 30), for example, those institutions which have satisfactorily met the standards of the American College of Surgeons have been indicated by an appropriate symbol.

8. On Nov. 9-10, 1939, the State Department of the federal government, through its Division of Cultural Relations, called a conference in Washington to discuss the opportunities for promoting the exchange of educational advantages between the United States and other American republics. To this end a Continuation Committee was appointed and a special subcommittee dealing with the field of medicine and public health was created under the chairmanship of General Hugh Cumming, director of the Pan American Sanitary Bureau. Of this committee the Secretary of the Council on Medical Education and Hospitals is a member. The Secretary attended a meeting of this Continuation Committee in Washington on March 8, 1940.

9. Under the auspices of the American Council on Education, a Conference on Accrediting was held in Washington, April 7 and 8, 1939. The whole program and philosophy of accrediting was arraigned by Chancellor Samuel P. Capen of the University of Buffalo and President J. J. Tigert of the University of Florida. However, there seemed to be a general acceptance of the opinion that in those professions which have responsibility for public health the accrediting of professional schools is a necessary auxiliary to the licensing function of the states.

10. *Medical Education.*—Comment: A. Dr. Stuart P. Cromer, formerly a member of the field staff of the Council on Medical Education and Hospitals, has been appointed dean of the University of Arkansas School of Medicine.

B. Rush Medical College of the University of Chicago is apparently about to discontinue its program for undergraduate medical education. It has been announced that after Oct. 1, 1940, no more candidates for the degree of Doctor of Medicine will be accepted.

C. The University of Illinois has created a new position, that of executive dean, who will be directly responsible to the president for the conduct of the professional schools located in Chicago. Dr. Raymond Allen, formerly dean of Wayne University College of Medicine, Detroit, has been chosen to fill this position.

D. Harvard Medical School reports that the Department of Pharmacology has been completely reorganized and that a university committee has been created consisting of Dr. Fuller Albright, Dr. Henry K. Beecher, Dr. C. Sidney Burwell ex officio, Dr. Walter B. Cannon, Dr. William B. Castle, President James B. Conant ex officio, Dr. Louis F. Fieser, Dr. A. Baird Hastings, Dr. Frederick L. Hisaw, Dr. Otto Krayer, Prof. Reginald P. Linstead and Dr. Soma Weiss, chairman.

E. Wake Forest College, as a result of a large gift from the trustees of the Bowman Gray Fund, is about to establish in Winston-Salem a four year medical school.

F. The University of Vermont has appointed as dean of the College of Medicine Dr. Hardy A. Kemp, formerly professor of bacteriology and preventive medicine at Baylor University College of Medicine.

G. After a long and bitter controversy over the reorganization of the Gallinger Municipal Hospital in Washington, D. C., an agreement has finally been reached with the health commissioner, Dr. George C. Ruhland, and Georgetown University School of Medicine and George Washington University School of Medicine which seems to eliminate the causes of friction and promises better care for patients in the hospital.

H. It is a satisfaction to record also that an agreement has been reached between the United States Department of the Interior and the trustees of Howard University, Washington, D. C., whereby the Freedmen's Hospital, Washington, would be available for the teaching of medical students on more satisfactory terms.

11. *Scottish Medical Students.*—In recent years a large number of Americans have been enrolled as medical students in the so-called extramural schools of Scotland. The outbreak of the war and the refusal of the State Department to furnish passports left a considerable number of these students in this country with little or no prospect of being able to complete their professional education. A representative of this group appeared before the Council at its meeting on Dec. 10, 1939, and urged that some steps be taken to provide the desired opportunities in

American schools. The position of the Council is stated in the following resolution:

*Resolved*, That, because of the lack of information regarding the quality of instruction in the Scottish medical schools, the Council on Medical Education and Hospitals of the American Medical Association believes that the question of accepting transfers from these institutions is a matter which should be left to the consideration of the individual medical schools of this country.

At a later date the State Department modified its ruling and issued passports to those students who would be able to complete the medical course next summer.

12. *Schools of Osteopathy.*—When the Council undertook its survey of medical schools in 1934, it attempted to include in its study also colleges of osteopathy. These colleges, however, refused to permit visitation by a representative of the Council, alleging that their activities were already supervised by the Bureau of Professional Education and Colleges of the American Osteopathic Association. Consequently, it has been impossible for this Council to secure first hand and official information concerning most of the schools of osteopathy. However, the Kansas legislature, through its Public Health Committee, undertook to make an investigation of the teaching of osteopathy and invited representatives of the medical and osteopathic professions to participate with them in this investigation. Thereupon the Legislative Committee of the Kansas State Medical Society invited the Secretary of the Council on Medical Education and Hospitals to act as one of its representatives during the visit to the Kirksville College of Osteopathy. It was found that the laboratory and clinical facilities of the college were grossly inadequate and that the faculty fell far short of meeting the accepted standards in respect to both numbers and competence.

13. From Feb. 1, 1939, to Jan. 31, 1940, 363 hospitals were visited as follows:

| | |
|---|---|
| For approval of internships | 108 |
| For approval of residencies and fellowships | 64 |
| For approval of internships and residencies | 59 |
| For registration | 132 |
| Total residencies and fellowships inspected | 436 |

During this period 230 hospitals were registered, 132 were closed or withdrawn from the Register and thirty-nine were refused registration.

There are 6,226 hospitals registered having a bed capacity of 1,195,026, 58,764 bassinets, 9,879,244 admissions and an average daily census of 996,483.

Hospitals approved for internships number 736, with 7,998 available internships. The number of vacancies in approved intern hospitals on Dec. 31, 1939, was 344.

Hospitals approved for residencies number 555 having a total of 4,709 residencies available.

In addition to the visitation of hospitals, inspections were made of nineteen schools of laboratory technic.

On Jan. 31, 1940, there were 154 schools of laboratory technic approved by the Council, sixteen schools offering courses in physical therapy and six schools of occupational therapy.

Respectfully submitted.

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS.
RAY LYMAN WILBUR, Chairman.
J. H. MUSSER.
FRED MOORE.
REGINALD FITZ.
FRED W. RANKIN.
CHARLES GORDON HEYD.
FRANK H. LAHEY.
WILLIAM D. CUTTER, Secretary.

## REPORT OF THE COUNCIL ON SCIENTIFIC ASSEMBLY

*To the Members of the House of Delegates of the American Medical Association:*

The Council on Scientific Assembly has given official consideration to all matters which have demanded its attention during the year covered by this report. The usual meetings of the Council have been held, and the annual conference of the Council with the section secretaries took place in Chicago in November.

### REQUESTS FOR CREATION OF NEW SECTIONS

From time to time the Council on Scientific Assembly has considered suggestions and requests for additional sections of the Scientific Assembly but has felt that, with the fifteen established sections through which programs of high quality have been presented at each annual session for many years and the Section on Miscellaneous Topics through which numerous special programs have been presented, it would be inadvisable to increase the number of sections.

There has been for some years an insistent demand for the establishment of a section of the Scientific Assembly that would represent the general field of anesthesia. The Council has given this matter long and careful consideration and is disposed to offer a recommendation to the House of Delegates favorable to the creation of such a section. At a later time the Council will submit a supplementary report dealing with this matter.

The Council has considered suggestions to the effect that the name of the Section on Pharmacology and Therapeutics be changed and that it be called the Section on Experimental Medicine. This matter was considered at length at the November meeting of the Council, and during the discussion it was proposed that the Section on Pharmacology and Therapeutics and the Section on Pathology and Physiology be combined to form a Section on Experimental Medicine. This proposal has been submitted to the secretary of each of the sections concerned with the request that it be fully considered by these sections during the New York session of the Association, and that the action which may be taken by each of the sections be reported to the Council with the possibility in view that a definite recommendation might be submitted to the House of Delegates at its 1940 session or at the time of the next annual session.

### THE SCIENTIFIC PROGRAM

The official program of the New York session is submitted as a part of the report of the Council on Scientific Assembly. It will be noted that the innovation effected at the St. Louis session whereby a part of the program of the General Scientific Meetings was contributed by physicians residing in St. Louis has been continued this year and one section of the program of the General Scientific Meetings is composed entirely of contributions from physicians of New York. The program presented by local physicians at the St. Louis session was very favorably received, and the members of the Council believe that the arrangements whereby physicians who are residents of the city in which an annual session is held will compose a part of the annual scientific program will work out to fine advantage.

Another change in the form of the scientific program at the last annual session, providing for panel discussions at the General Scientific Meetings and in some of the section meetings, appears to have met with general favor, and it is the purpose of the Council to attempt to develop to a greater extent in future years programs of this general type.

At the proper time, the Council on Scientific Assembly will submit to the House of Delegates nominations for Affiliate Fellowship in the American Medical Association.

The Council would express its grateful appreciation of the faithful and efficient service of the officers of the sections of the Scientific Assembly, and especially of the secretaries of the sections, who bear the brunt of the work entailed in the compilation of the section programs. The Council also wishes to extend its thanks to all those who will appear as contributors to the program of the General Scientific Meetings and to the programs of the scientific sections.

Respectively submitted.

JAMES E. PAULLIN, Chairman.
A. A. WALKER.
SAMUEL P. MENGEL.
CLYDE L. CUMMER.
J. GURNEY TAYLOR.
NATHAN B. VAN ETTEN, President-Elect. } Ex officio.
MORRIS FISHBEIN, Editor, THE JOURNAL. } Ex officio.
OLIN WEST, Secretary. } Ex officio.

# AN ANALYSIS OF THE WAGNER-GEORGE HOSPITAL CONSTRUCTION BILL AS REPORTED TO THE SENATE

PREPARED BY THE BUREAU OF LEGAL MEDICINE AND LEGISLATION, AMERICAN MEDICAL ASSOCIATION

The Senate Committee on Education and Labor reported the Wagner-George hospital construction bill, S. 3230, to the Senate April 30, recommending that all after the enacting clause of the bill be stricken and suggesting substitute provisions drawn partly from the original bill, partly from recommendations made to the committee at the hearing recently conducted on that bill, and partly from Senator Taft's hospital construction plan.

The reported bill proposes a six year program for providing needed hospital facilities. To assist states, counties, health and hospital districts and other political subdivisions of the states to provide better health and medical services through the construction, improvement and enlargement of needed hospitals, especially in rural communities and economically depressed areas, the bill authorizes to be appropriated to the United States Public Health Service (1) $10,000,000 annually for six years, beginning with the fiscal year ending June 30, 1941; (2) annual appropriations of $500,000 for six years for administrative expenses; (3) for each of the five fiscal years beginning with the fiscal year ending June 30, 1947, such sums as may be necessary for hospital maintenance grants under the act, and (4) such sums as may be required by the Public Health Service, after the initial six year period, for necessary expenses in administering such provisions of the act as may then be in operation, as, for example, those relating to grants for maintenance. All amounts authorized to be appropriated are to remain available until expended.

## DEFINITIONS

The term "hospital" as used in the reported bill includes "health, diagnostic and treatment centers, the equipment thereof, and facilities relating thereto." The term "hospital project" includes the construction, improvement or enlargement of a hospital. The term "state" includes the territories and insular possessions of the United States and the District of Columbia.

## TWO CONSTRUCTION PLANS CONTEMPLATED

The program contemplates two plans for the construction of hospital projects. Plan I relates to hospital projects to be undertaken under the appropriation of $10,000,000 for the fiscal year ending June 30, 1941. Plan II proposes a different construction program to be carried out from the annual federal appropriations of $10,000,000 for five fiscal years beginning July 1, 1941.

## HOSPITAL CONSTRUCTION PLAN I

During the fiscal year ending June 30, 1941, the program contemplates that any state, county, health or hospital district or other political subdivision of a state desiring to participate in the benefits of the bill shall apply to the Surgeon General of the Public Health Service, through the state health authority.

*Contents of Application.*—Each application must contain information necessary (1) to established the need, in addition to existing public and private hospitals, for the hospital project to which such application relates and (2) to satisfy the Surgeon General that the hospital (*a*) will be made available, under appropriate conditions and to the extent of the hospital facilities, to every person residing in the territorial area of the applicant for such hospital, (*b*) will be maintained in good repair and (*c*) will be utilized in furnishing service of satisfactory quality, in accordance with standards from time to time prescribed by the state and approved by the Surgeon General or, prior to the effective date of such standards, in accordance with standards prescribed by the Surgeon General.

*Approval of Application.*—This application must first be approved by the National Advisory Hospital Council to be created under the provisions of the bill. If an application has been approved, the Public Works Agency is to be authorized to construct the hospital.

*Lease of Hospital.*—After completion of a hospital, the Surgeon General is authorized to lease it to the applicant, the title to such leased hospital, to the equipment installed therein by the United States and to the land on which such facilities are located to remain in the United States until divested by conveyance as authorized by the act or as otherwise authorized by law. Any such lease may be terminated only (1) on mutual consent or (2) on conveyance of the hospital to the lessee or (3) if the Surgeon General finds that the lessee has failed substantially to comply with any applicable rule or regulation of the Surgeon General or with any provision in the lease.

Each lease must contain a provision requiring the lessee to yield up the premises and equipment at the termination of the lease in the same condition as the premises and equipment were received, reasonable wear and tear excepted, and may contain such other provisions not inconsistent with the act as are prescribed by the Surgeon General, including requirements with respect to additions to the premises and equipment leased.

*Conveyance of Leased Hospital.*—On recommendation of the Surgeon General, based on satisfactory operation of a hospital by the lessee, the Federal Security Administrator "may convey such hospital to the lessee thereof, and he shall make such a conveyance in any case in which the Surgeon General finds that any such lessee has operated any such hospital in accordance with the terms of his lease and the rules and regulations promulgated under this act for sixty consecutive months."

*Operation of Hospital After Lease Cancelled.*—The bill does not disclose the manner in which a hospital is to be operated if for any reason a lease is cancelled.

## HOSPITAL CONSTRUCTION PLAN II

From the appropriations to be made available during the second, third, fourth, fifth and sixth year of the program, it is contemplated that grants will be made to states, counties, health or hospital districts or other political subdivisions of a state, to aid in defraying the cost of constructing needed hospital facilities.

*State Plan Required.*—No federal money to be made available during these five years, for construction or maintenance purposes, may be used in any state unless that state has submitted to the Surgeon General "state plans for constructing, improving, or enlarging needed hospitals." Such a plan must specify (*a*) the location, character, adequacy and methods of operation of the existing public and private hospitals in the state, (*b*) the type, size and location of any additional hospitals that may be needed and (*c*) such other information with respect to such existing hospital and additional needed hospitals as the Surgeon General may require.

*Contents of Application.*—In addition to the information required of an applicant under construction plan I, an application under plan II must contain (1) a description of the site for the project, (2) preliminary plans and specifications therefor and (3) assurance that title to the site is, or will be, vested solely in the applicant.

*Approval of Application and Determination of Amount of Federal Grant.*—After an application under plan II has been approved by the Surgeon General (plan I requires approval of an application by the National Advisory Hospital Council) that official, after proper investigation, will determine the amount of the grant to be made, "which grant shall not be less than twenty-five per centum, nor more than ninety per centum of the cost of such hospital project and equipment therefor," the percentage being determined after taking into consideration, if the applicant is a state, its financial resources as measured by the per capita income accruing to the inhabitants thereof, and, if the applicant is other than a state, such financial resources of the state in which the applicant is located and the financial condition and ability of the applicant. The applicant must submit satisfactory proof of ability to pay its share of the cost of such project and equipment. Grants are to be made available to an applicant in such instalments as are recommended by the Federal Works Administrator, who is to be authorized to make such inspections of the hospital during its construction as he deems necessary.

*Title to Hospital Constructed Under Plan II.*—It is contemplated that the federal government shall acquire no title to hospitals constructed under plan II.

### GRANTS FOR MAINTENANCE

With respect to hospital projects constructed under either plan I or plan II, on recommendation of the Surgeon General, the Federal Security Administrator may authorize grants for maintenance during the first five years of operation of the project. In making his recommendation the Surgeon General will, it is contemplated, take into consideration the financial ability of the applicant to maintain the hospital. If a mental hospital, the grant for maintenance may not exceed $150 per bed for the first year, $120 for the second year, $90 for the third year, $60 for the fourth year and $30 for the fifth year. If other than a mental hospital, such grant may not exceed $300 a bed for each of the first two years, $240 for the third year, $180 for the fourth year and $120 for the fifth year.

The Federal Security Administrator may refuse to continue or may reduce maintenance grants if the Surgeon General finds that a hospital project has not been operated in substantial accordance with rules and regulations promulgated under the act or in accordance with the terms of a lease.

### NATIONAL ADVISORY HOSPITAL COUNCIL

The National Advisory Hospital Council will consist of the Surgeon General of the Public Health Service as chairman and eight members appointed by the Surgeon General with the approval of the Federal Security Administrator, selected from leading medical or scientific authorities who are outstanding in matters pertaining to hospitals and other public services. Each appointed member will receive $25 a day during the time spent on official business and in addition expense allowances.

The Council is to be authorized, in addition to approving applications under plan I, "to advise" the Surgeon General with reference to the carrying out of the provisions of the act, including (1) standards which are necessary to insure the construction of proper buildings and the securing of proper equipment; (2) the method by which hospital personnel may be best trained; (3) standards and principles to be considered in connection with any state plan; (4) standards which are necessary to insure proper administration of the hospitals constructed under the act, and proper care of persons served by the hospitals; (5) standards to be considered in determining the need for hospital projects for which applications are submitted and in determining whether such projects will be adequately maintained and will otherwise fulfil the requirements of the act; (6) procedures for securing reports and for making inspections with reference to professional service in and standards of maintenance of hospitals constructed under the act, and (7) standards for making certain other determinations.

### UNITED STATES PUBLIC HEALTH SERVICE

In addition to passing on applications for projects and maintenance grants, the Surgeon General is to be required to consult with other Federal health and welfare activities and to cooperate with them to the fullest extent, and will be authorized, "after consultation with the Council as to general policies," (1) to prescribe standards for training any personnel required in connection with any such hospital project and to assist financially such personnel in securing such required training, subject to the limitation that the total amount of such assistance shall not exceed 2 per cent of the amounts appropriated for construction and maintenance; (2) to cooperate with federal, state and local health and welfare authorities and with professional agencies; (3) to make inspections with respect to professional service in and maintenance of hospitals constructed under the act; (4) to make such rules and regulations as may be necessary to carry out the purposes of the act, including the prescribing of standards of personnel, maintenance and operation of hospitals constructed under the act and the requiring of reports with respect to such hospitals, and (5) to conduct, assist and foster studies and surveys with respect to needs for hospitalization and problems of hospital operation.

The bill authorizes the appointment of such additional commissioned officers and other personnel in the United States Public Service as may be necessary in carrying out its provisions.

# PHYSICAL EXAMINATION OF DRIVERS OF MOTOR VEHICLES IN INTERSTATE COMMERCE

PREPARED BY THE BUREAU OF LEGAL MEDICINE AND LEGISLATION, AMERICAN MEDICAL ASSOCIATION

Revised regulations of the Interstate Commerce Commission applicable to common carriers and contract carriers by motor vehicles became effective Jan. 1, 1940. They provide, among other things, that no motor carrier shall permit any person to drive any motor vehicle operated in interstate or foreign commerce unless the driver possesses certain minimum physical qualifications.

No driver may be so employed who has sustained the loss of a foot, leg, hand or arm. To the extent that they are likely to interfere with safe driving, a driver must not have any mental, nervous, organic or functional disease and there must be no loss of fingers, impairment of use of foot, leg, fingers, hand or arm, or other structural defect or limitation. With respect to eyesight, the regulations require a driver to have visual acuity, either without glasses or by correction with glasses, of at least 20/40 (Snellen) in one eye and 20/100 (Snellen) in the other eye; form field of not less than 45 degrees in all meridians from the point of fixation, and ability to distinguish red, green and yellow. As to hearing, the regulations require that it shall be "adequate."

New drivers entering, after Jan. 1, 1940, the employ of a common carrier or contract carrier by motor vehicle engaged in interstate or foreign commerce, must undergo a physical examination. The revised rule imposing this requirement is as follows:

RULE 1.3.—PHYSICAL EXAMINATION.

RULE 1.31.—*Doctor's certificate required for new drivers.* On and after Jan. 1, 1940, every motor carrier shall have in his files a certificate of physical examination signed by a qualified doctor of medicine for every new driver entering the motor carrier's employment, attesting that the doctor has examined said driver and found him to meet satisfactorily the qualifications set forth in rules 1.21 to 1.23, inclusive. Said certificate shall be filed with the motor carrier within ten days of the new driver's entering the motor carrier's employment. For the purposes of this rule, a new driver shall be deemed to be any driver applying for employment as a driver who is unable to furnish a certificate of physical examination showing that he has been examined and qualified as required by this rule within one year prior to the date of his application for employment. This requirement shall also apply to owner-drivers who become such on and after Jan. 1, 1940.

RULE 1.32.—*Carrier's right to require additional examinations.* Nothing contained in rule 1.31 shall be so construed as to prevent a motor carrier from requiring physical examinations of drivers in addition to those prescribed in that rule.

### RECOMMENDED PRACTICES

(Not compulsory requirements)

The following form is recommended as a Standard Physical Examination form in connection with physical examination of drivers required under rule 1.3:

### RECOMMENDED STANDARD PHYSICAL EXAMINATION FORM

For Drivers of Interstate Buses and Trucks

(Note to Examining Physician): Read instructions before starting examination

*Be sure to record an answer to each question*
*When negative or positive so state*

### PERSONAL AND MEDICAL HISTORY

Name in full.....
Age last birthday.....Color.....Marital Status S M W D
Address: Street.....City.....State.....
Usual occupation .....
Years' experience as operator of commercial motor vehicle.....

*History of past illnesses*
(When positive *insert date*)

Tuberculosis .....Dysentery.....Paralysis.....
Pleurisy .....Hemorrhoids.....Diabetes.....
Hemoptysis .....Syncope.....Syphilis.....
Peptic ulcer .....High blood pressure.....Gonorrhea.....
Pneumonia .....Epilepsy or fits.....Hematuria.....
History of hospitalization.....
Have you other illnesses, injuries, or operations.....

### RECORD OF PHYSICAL FINDINGS

*General appearance and development:* Good.....Fair.....Poor.....
Height ..... Weight.....
*Head:*
Eyes: For Distance { without glasses / with glasses if worn } { Right 20/ Left 20/
Evidence of disease or injury: Right..... Left.....
Color vision (lantern).....
Ears: Hearing, 20 ft.: Right ear /20 Left ear /20
Disease or injury.....
Mouth ..... Throat.....
*Thorax:*
Heart .....
If organic disease is present, is it fully compensated?.....
Blood pressure (sitting): Systolic.....Diastolic.....
Pulse: Before exercise.....After 2 minutes rest.....
Lungs .....
.....
*Abdomen:*
Scars.....Abnormal masses.....Tenderness.....
Hernia: Yes.... No.... If so, where?..... Is truss worn?.....
.....
*Genito-Urinary:*
Scars .....Urethral discharge.....
*Reflexes:*
Romberg .....
Pupillary ..... Light R..... L..... Accommodation R..... L.....
Knee jerks: Right: Normal..... Increased..... Absent.....
Left: Normal..... Increased..... Absent.....
*Extremities:*
Upper .....
Lower .....
Spine .....
*Laboratory findings if tests are indicated:*
Urine: Specific gravity..... Albumin..... Sugar.....
Other .....
..... .....
(Date) (Examining physician)

### PHYSICIAN'S CERTIFICATE

This is to certify that I have this day examined.....
and find him { physically fit / physically fit only when wearing glasses / physically unfit and disqualifying condition has been discussed with applicant }
to perform the usual duties incident to employment as a driver of commercial motor vehicles. This certificate is based on information obtained in the making of a physical examination in accordance with the regulations of the Interstate Commerce Commission for the qualification of drivers and the standard form recommended for such examination. I have kept on file in my office this record of his examination.
Date..... Place..... Signed.....
(Examining physician)
Address.....
Driver's signature.....

NOTE.—Motor carriers desiring to use the Recommended Standard Physical Examination Form and Physician's Certificate must obtain their own supplies of such forms. The forms should be reproduced in size considerably larger than here shown.

### GENERAL INSTRUCTIONS FOR MAKING PHYSICAL EXAMINATION AND RECORDING FINDINGS

*Be sure to record an answer to each question*
*When negative or positive so state*

#### MEDICAL HISTORY

The purpose of this physical examination is to detect the presence of physical defects of such a character and extent as to affect the applicant's ability to safely operate a motor vehicle. The examination should be made carefully and at least as complete as is indicated by the attached form. Defects may be recorded which do not, because of their character or degree, indicate that a certificate of physical fitness should be denied. The presence, however, of these defects should be discussed with the applicant and he should be encouraged to take the necessary steps to insure correction particularly of those which if neglected might lead to a condition likely to affect his ability to drive safely. Careful inquiry regarding past illness, the character and date of such illness, may reveal cause for defects found on physical examination. Lack of knowledge concerning the etiology of certain defects may result in the rejection for employment. Such data also may indicate the need for making certain laboratory tests. Certain serological and laboratory tests will frequently be made by state department of health laboratories without charge.

*General Appearance and Development.*—Notice *serious* under or over weight; any posture defects; perceptible limp, anemia, tremor or other form of nervousness such as might be caused by chronic alcoholism, thyroid intoxication or other illnesses. The rules of the Interstate Com-

merce Commission provide that no driver shall be addicted to the use of narcotics or habit-forming drugs, or the excessive use of alcoholic beverages or liquors.

Height and weight. Stripped to the waist with shoes and socks removed.

Head. *Eyes.*—The telebinocular, Snellen chart and other approved tests may be used to measure visual acuity. It is desired, however, when other than the Snellen chart is used, that the results of such test be expressed in values comparable to the standard Snellen chart. If applicant wears glasses, these should be worn while applicant's visual acuity is being tested. Indicate on record by encircling appropriate phrase on form "without glasses" or "with glasses if worn." In recording distant vision, use 20 feet as normal. Report all vision as a fraction with 20 as numerator and the smallest type read at 20 feet as denominator. Note ptosis, discharge, corneal scar, exophthalmos or strabismus uncorrected by glasses as determined by the simple cover test.

*Ears.*—Note evidence of mastoid or middle ear disease; discharge. In recording hearing record 20 feet as normal distance for conversational voice and record deviation from normal as fraction with 20 feet as denominator and actual distance as numerator.

*Mouth.*—Note evidence of infection, pyorrhea.

*Throat.*—Note evidence of disease and enlarged or infected tonsils.

Thorax. *Heart.*—Stethoscopic examination is required. Note murmurs and arrhythmia.

Blood pressure may be recorded with either spring or mercury column type of sphygmomanometer.

*Pulse.*—Normal pulse taken after being seated at least two minutes; then have applicant stand and, placing one foot on the seat of an ordinary chair, raise his body to an erect position twenty times in thirty seconds. Pulse rate should return to his normal after two minutes' rest. Because of abnormal conditions, some applicants will be unable to do this. This test has been found helpful in ascertaining physical ability for work.

*Lungs.*—It is necessary that the auscultatory cough be used. Tuberculosis, if suspected, state whether active or arrested and, if arrested, your opinion as to how long it has been quiescent. Sputum to be examined for tubercle bacilli in all suspected cases. Sample may be sent to the state health department.

Abdomen: *Scars.*—If present, state whether recent and if abnormally tender or if there is any evidence of hernia at the site of scar.

*Abnormal Masses.*—If present, note tenderness and whether or not individual knows how long they have been present.

*Tenderness.*—When noted, state where most pronounced and cause suspected.

*Hernia.*—Note whether no hernia, but impulse on coughing; no hernia or impulse, but abnormally large rings. Any hernia should be noted, and if present state whether it is retained by well fitted truss.

Genito-Urinary.—When scars or urethral discharge are present, indicate patient's reason for same and when indicated submit smear of discharge to laboratory for examination.

Reflexes.—If positive Romberg is reported, indicate degree. Pupillary reflexes should be reported for both light and accommodation. Knee jerks are to be reported absent only when not obtainable on reinforcement and increased when foot is actually lifted from the floor following light blow on the patella; otherwise as normal.

Extremities. *Upper.*—Note deformities and limitation of motion.

*Lower.*—Note deformities, limitation of motion, varicose veins. In case of hand deformities, note particularly whether or not sufficient grip is present to enable driver to secure a grip on the wheel. Show chronic ulcers. Note any atrophy or paralysis.

*Spine.*—Note deformities and limitation of motion. Be sure to record loss of foot, leg, fingers, hand or arm, or impairment of use thereof, or other structural defect or limitation likely to interfere with safe driving.

Laboratory Findings.—Urine analysis is indicated whenever systolic blood pressure is over 150 and diastolic over 100 and such other times as medical history or findings upon physical examination may indicate that they are necessary. A serological test should always be taken in case of those giving positive history of luetic infection or present physical findings on examination presenting possibility of latent syphilis.

On completion of the examination, physician should always date and sign his record of the same.

# SUGGESTED SCHOOL HEALTH POLICIES

*(Concluded from page 1676)*

## 4. PROGRAM OF HEALTH INSTRUCTION

(abstract)

Health has been recognized for many years as an objective of education, probably with a realization of the basic nature of good health as a foundation for "living most and serving best," and it is likely that schools can make their greatest contribution to health through health instruction. All outlines of school health programs should state clearly and definitely the responsibility of schools to instruct pupils about the functioning of the human body, the causes and prevention of certain diseases, the acquirement and improvement of health, and community health programs. This instruction, as is true of all good education, will stress habits formed and attitudes developed as well as knowledge learned. The promotion of health through education constitutes a distinct challenge to present day education.

It is recognized that many experiences of pupils while at school contribute to their health education. At the present time, commendable emphasis is being placed on the educational implications of nurse-pupil contacts and the educational outcomes of examinations by physicians and dentists.

### SCOPE OF INSTRUCTION

Health instruction will vary with different grade levels of pupils. In the primary grades, emphasis will be placed on healthful living and the cultivation of attitudes which make healthful living enjoyable.

This concept of health instruction is based on the belief that health instruction should do more than teach health habits and should avoid creating the impression that all disease can be prevented by "living healthfully." As far as is known, no amount of "healthful living" will prevent appendicitis, rheumatic fever or cancer! School health instruction programs should teach healthful living but they should also give some understanding of certain diseases. The instruction concerning disease should be limited, however, to information which laymen need, and care should be taken to present it in such a way that pupils will not develop fears or feel that they can diagnose and treat their own sicknesses. Although first aid procedures will be taught as well as procedures in the care of the sick at home, these topics should be accompanied by a discussion of the limitations and dangers of self diagnosis and self treatment. School health instruction should include the causes of disease, how disease is spread, what preventive measures are available, and the proper selection and use of professional health services. Through such a program of health instruction, schools can promote individual and community health.

### SCIENTIFIC ATTITUDE ESSENTIAL

Perhaps the greatest value of school health instruction comes from the development of a scientific attitude toward problems of health and disease and a realization that the principles of biology, physics and chemistry are as applicable to the human body as to matter or material elsewhere. It is believed that a scientific attitude toward health and disease can break down superstitions and fads and thereby fit pupils to analyze critically the tremendous amount of misleading advertising presented in magazines and over the radio. Practice in distinguishing between fact and fallacy in health problems, learning where to find scientific data and authentic opinions, and studying various types of problems related to quackery and "patent medicines" are methods to be employed in developing a scientific concept of personal and community health problems.

As a policy it is recommended that schools recognize and acknowledge their responsibility to educate pupils regarding the acquirement and improvement of health, the prevention of disease and community health problems. We recommend serious attention and careful study to determine the best way to meet this obligation.

### ADULT HEALTH EDUCATION

The need for health education is not limited to children; it is found that health education is becoming an integral part of expanding programs of adult education. It has often been stated—and truthfully—that thousands of lives could be saved annually and thousands of people could be happier and healthier if our present knowledge of health and disease were fully utilized. For the attainment of this goal, health education for adults, as well as for children, is necessary.

Needed health education cannot all be given during the school life of an individual. There are some phases of health which require a mature point of view and in some phases interest is not keen until maturity, or even middle age, is reached. Present day adults whose health education is limited to what they learned in school may know nothing about insulin, about newer methods of diagnosing and treating tuberculosis or about recent knowledge which brings hope to cancer sufferers whose condition is diagnosed early. There are parents who learned nothing about the prevention of diphtheria when they were in

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school because at that time diphtheria prevention measures were unknown or untried.

From the point of view of the school, we cannot expect children to be well cared for and in condition to profit from the school program if parents do not know how to supervise their health. Intelligent home care is just as important as intelligent school care. Adult health education programs can coordinate the efforts of the home and the school with a resultant force for improved child health of immeasurable value.

Adult health education should:

1. Bring the health knowledge of adults up to date with particular emphasis on preventive measures.
2. Meet the interests and curiosities of adults.
3. Supply deficiencies in health knowledge and influence attitudes of adults.
4. Coordinate the health supervision activities of parents and the school.
5. Interpret to adults the community facilities and the community program for safeguarding and advancing public health.

Departments of education have definite responsibilities in meeting the need for adult health education, but they will find departments of health and medical and dental societies willing to share these responsibilities, helpful in pointing out desirable approaches, and eager to suggest topics needing special emphasis.

Many adult education programs give particular attention to non-English speaking adults. The recognized specific problems of this group do not preclude presenting fundamental health information. Adult health education should be available to all.

## 5. PERIODIC HEALTH EXAMINATIONS (in full)

School health examinations have experienced many changes since first introduced. Originally planned as a means of detecting signs of communicable disease, they were later used 'to discover untreated skin diseases and other conditions which might result in unnecessarily prolonged absence from school. Then came an emphasis on the discovery of physical defects, and at the present time emphasis is being placed on health examinations as educative experiences. This latter emphasis presupposes parents will be invited to the examination of elementary pupils, that the physician will have time to explain his conclusions to the pupil or parent and give detailed information to the nurse for use in the follow-up program.

Consideration of the health examination as an educative experience has created a desire to eliminate the hurried, careless inspection in favor of an examination of fewer pupils in a more leisurely, considerate manner.

During the past few years, considerable attention has been given to the examination of children previous to their enrolment in school. The Summer Round-Up Program, sponsored by the Parent-Teacher Association, has centered a nationwide interest on this problem and has achieved marked progress in making parents conscious of the need for children to be free of remediable defects on entrance to school. As an ideal, we should look forward to the time when children—preschool children, school children and children out of school—will have periodic health examinations. Certainly schools should do all they can to encourage health examinations for preschool children, and their teachings and practices should be such that pupils leaving school will know the value of such examinations.

### EXAMINATIONS BY PRIVATE PHYSICIAN

In some communities pupils, whenever possible, are referred to their private physician for health examinations and given a form on which the private physician records both his conclusions and his recommendations for the school. The physician's conclusions are entered on the health record card and the card returned to the school and filed. School examinations are necessarily limited in scope because of the large number to be examined with limited personnel, lack of laboratory facilities, and the school physician's lack of intimate knowledge of the pupil and his past history. As usually planned, the school examination is limited to a consideration of factors related to a pupil's ability to carry on satisfactorily the modern school program. For the latter reason, school examinations give particular attention to vision and hearing and to fitness for participation in the physical education part of the school curriculum. The school examination is not an adequate substitute for continued health supervision by the private practitioner, and the referral of pupils to their private physician for examination is good practice.

### RESPONSIBILITY OF SCHOOLS

As a policy regarding health examinations, it is suggested that schools assume responsibility for developing a program of periodic health examinations, and that this program encourage examination of pupils by their private physician. In following such a policy it will be necessary for schools to provide examinations for large numbers of pupils whose parents cannot or will not arrange examinations otherwise. Such examinations as are provided by schools should be planned particularly for assisting in understanding the pupil, estimating the pupil's ability to progress with his school work and determining what adaptations in the school program may be desirable.

### LIMITATIONS OF EXAMINATIONS

In considering periodic health examinations it is pertinent to point out both their limitations and the fact that serious sickness may develop the day after a thorough, careful examination has revealed no abnormality. Those who believe that negative conclusions assure continued good health labor under a false security. Physical examinations reveal conditions as they exist at the time of examination but not necessarily what will happen in the future. As a means of finding children who are in need of medical care, the health examination is limited. The pupil with a communicable disease, with pain in the abdomen, with headache, as well as the pupil with blurred vision, all need medical care, but these conditions may occur soon after an examination and with no notation on the health record to warn of their approach.

### DAILY HEALTH OBSERVATION

The day by day observation of pupils by teachers and the referral for further investigation of pupils who do not seem well are thought by some to be as valuable a health-promoting activity as the periodic physical examination. Such observations—always to be used as a supplementary measure—frequently detect pupils in need of medical care whose need would not be discovered by medical examination. They are most effective when teachers are both trained to make careful observations of pupils and conscious of their responsibility for pupil health supervision.

### FREQUENCY OF EXAMINATIONS

How frequently should school sponsored examinations be conducted? It may first be stated that provision should be made for an examination, by either a private physician or a school physician, whenever a pupil fails to grow as expected, shows signs or symptoms of disorder or disease, or when there appears to be a health basis for his failure to make expected school progress. The examination of pupils referred by teachers because of school problems possibly caused by health conditions, or because of observed abnormal conditions, should always receive precedence over any routine program of examinations. Administrative arrangements of the school should simplify teachers' procedure for receiving this help. In addition to the examination of pupils referred by teachers, it is desirable that routine examinations be conducted at intervals, the frequency of which will depend on the type of examination under consideration. Many school health workers urge monthly weighing as part of the health education program and as a means of detecting cessation of growth over periods of three or more successive months. Weighing and measuring of pupils is an aid in understanding pupil growth and an educational device to interest them in health, although it is not a reliable index of nutrition. Annual testing of vision is recommended. It is believed that hearing tests should be made annually in the elementary schools but that biennial tests are sufficient in secondary schools. Children should have dental examinations at least twice each year, and it is recommended that schools urge pupils to have these examinations by their private dentist.

With regard to the physicians' examinations—which usually cover as a minimum nutrition and posture, condition of the eyes, ears, nose, throat, speech, heart, lungs, glands and skin—

there have been differences of opinion as to the desired frequency. Some advocate annual examinations while others favor three or four examinations during the school life of a child. Further study is needed before a scientific answer can be given. This study will have to consider the cost of examinations and the personnel needed and weigh these factors against the benefits that may accrue. In the opinion of this committee four examinations—two in the elementary school and two during the secondary school—should detect most abnormal conditions affecting growth, health and school progress as well as afford teachers information necessary for understanding pupils and adjusting school programs to their needs. Again, it is emphasized that periodic examinations should be supplemented by the day by day observation of pupils and arrangements whereby those who show evidence of disease or disorder may be examined and, where necessary, helped to secure needed treatment.

Pupils who show serious defect or abnormality and those who have recently had a serious illness or accident may require more frequent examinations, perhaps annual examinations. The need for repeated examinations can best be determined by the examining physician based on the conditions he finds.

The question may be raised, Should those participating in strenuous athletics be examined annually or are four examinations during the school period sufficient for this group? With the present development of physical education programs, it is found that practically all junior and senior high school pupils take part in strenuous activity and it is quite probable the pupils most in need of health supervision are not those who are members of an interscholastic squad working under the close supervision of a physical education teacher (coach) but rather those who are less proficient but still active in sports. Regardless of the athletic proficiency of the pupil, regardless of whether the activity is strenuous or mild, school-time, after school or vacation activity, it is believed that parents should assume the primary responsibility for securing medical advice and medical care for pupils. Consequently the policies which govern school health activities in general should apply to school health activities in relation to athletics. In keeping with this point of view it is believed that two school-sponsored examinations during the secondary school period, coupled with day by day teacher supervision and special examinations as indicated in individual cases, discharge the school responsibility for health supervision. Those who are taking part in strenuous athletics —particularly activities which are not closely supervised— should be encouraged to have annual examinations by their private physicians. In all cases there must be an awareness on the part of physical educators and coaches of the need for referring pupils to a physician when abnormal signs are present, a knowledge of the machinery to be used in making such reference, and a general understanding of school health policies.

## 6. SPECIAL ATTENTION TO PUPILS NEEDING MEDICAL OR DENTAL CARE (in full)

The special attention given by schools to pupils in need of medical and dental care constitutes one method adopted by society to make sure that the health of children is not neglected. From this social point of view the follow-up program assumes great importance and deserves special consideration.

### A COOPERATIVE ENTERPRISE

The follow-up program is a cooperative enterprise requiring participation by school personnel, private physicians and dentists, social and welfare agencies and parents. The initial step is made at the time of examination, when in a friendly sympathetic manner the physician outlines the treatment needed and where it can be obtained. This initial step is extremely important, because adequate follow-up cannot take place if the physician is not specific in informing nurses and teachers of what is needed. The nurse plays an important role in these procedures, acting as liaison between the home and the school and informing parents and teachers of community treatment resources. However, there is need for all teachers to assist in the follow-up program. This is especially true in the dental field, where the number of pupils needing guidance is so large that significant progress can be made only through the help of many individuals.

### PRINCIPLES FOR SCHOOLS

In helping pupils needing medical or dental care there are several principles which school personnel should follow. First, school personnel should not attempt to diagnose a condition or suggest to parents or pupils a possible diagnosis. Secondly, school personnel should never attempt to select a physician or dentist for individual pupils or families; it is important that each family make its own selection of professional advisers. If the family is new in the community, it may obtain the names of qualified professional people from local medical and dental societies. Thirdly, school personnel should advise consultation with the private physician and dentist and suggest free clinics or part-pay clinics only for those unable to afford private care. When parents or pupils are referred to clinics, they should be informed that clinics are for those unable to pay regular fees and that whether or not a clinic will give service depends on the results of a social investigation. By such procedures, schools decrease the misuse of clinics which, if carried too far, might jeopardize the opportunities of needy pupils.

### TREATMENT NOT A SCHOOL FUNCTION

It will be noted that special attention to pupils needing medical or dental care does not make the school responsible for diagnosis and treatment. Diagnosis and treatment (including diphtheria immunization, refraction of the eyes and the fitting of glasses, tonsil operations and dental prophylaxis) are responsibilities of practicing physicians and dentists. The securing of dental and medical care is a responsibility of the parent. The school interest in pupil welfare leads it to help parents make the best possible use of community treatment facilities, but this interest does not imply that treatment will be provided.

No pupil should be handicapped because he fails to receive needed health care. The program outlined to follow up results of examinations recognizes this and offers parents every possible assistance in obtaining treatment for their children. But this should be done in a manner which allows parents to maintain both their self respect and their responsibility for the care of their children. This is preferable to transferring to teachers and nurses responsibility for securing medical care for pupils.

It is believed that this statement of policy is sufficiently clear as it relates to a majority of pupils. However, in their application several important problems are encountered.

### NEEDY CHILDREN

One problem relates to children whose parents are financially unable to provide needed medical and dental care. The supplying of this care, as well as the supplying of other needs, is a community rather than a school problem. The solution of this problem can best be accomplished through the cooperative efforts of many groups, such as welfare agencies, medical and dental societies, public health agencies, schools and civic organizations. This point of view is that community problems should be solved by representatives of various groups working together rather than by one individual or one group.

The schools are keenly interested in seeing that poor children receive the attention they need. Children in need of medical or dental care are not successful students, as witnessed by the number with serious physical defects who become retarded in their school work. Further, the value of the health examination and educational program of the schools is greatly diminished if pupils are unable to obtain the professional services which they learn are necessary. Finally, no community can allow its children to be deprived of the right to grow into healthy, strong manhood or womanhood. Healthy children are the greatest asset a community can have.

### RESPONSIBILITY OF THE SCHOOL

If existing community facilities for the medical and dental care of poor children are found inadequate, what should the schools do? Probably the best procedure is to obtain specific data indicating the inadequacy of treatment facilities and present these data to those in charge of medical and dental relief programs with a plea that adequate facilities be provided. Schools are better organized to discover the need for additional medical and dental care for children than any other group in the community, and they should take the initiative in bringing these needs to light.

Such a plan is superior to the establishment of treatment clinics in schools. If school clinics are developed they serve only the needs of children in the public schools, while clinics for adults and non-public school pupils may be operated under other administration. To avoid duplication or, at best, dual control it seems better that existing facilities for the medical and dental care of adults and children be increased if necessary so to care for school children. Another reason for having treatment facilities at places other than the school is that treatment clinics in schools cause confusion as to the responsibility and function of the school health program. The presence of clinics at school leads to the assumption that the school is responsible not only for health education and health supervision but for providing medical and dental care to all pupils. Education regarding the use of community facilities is a responsibility for the schools, but if, instead of doing this job, it provides treatment, it will not be teaching pupils and parents how to secure treatment but will be making them dependent on the school for these services. As stated by the White House Conference Report on the School Health Program, "Any policy that does for the individual what he can do for himself leaves him more dependent and less willing to care for himself when the protecting hand is withdrawn." Sound school health education teaches children and parents where and how to get treatment, so that when they leave school and when they are in need of care during vacations they will have learned how health needs may be met.

Another problem applies to parents who are financially able to afford treatment but do not provide it. The number of these cases is, quite happily, comparatively small when parents understand the implications of the child's condition and the need for treatment. The school responsibility in such cases depends on the reason for neglect. If it is due to ignorance or to lack of knowledge of existing facilities, the school through the teacher or nurse should consider it has a definite task and a definite responsibility. If, however, there is a wilful neglect, the case is one to be decided by the probation department or the juvenile courts.

### 7. SPECIAL EDUCATION PROGRAMS (in full)

Health examinations reveal pupils in need of medical and dental treatment; they also discover pupils whose education programs need adjustment to their physical abilities.

Some of these adjustments will be related to physical education. The examining physician (either private or school) should state whether a pupil may participate in usual physical education activities, whether some modification is needed as well as whether or not there is need for special corrective physical education. The foundation of school efforts to improve posture should be medical examinations thorough enough to determine both causes of poor posture and the practicability of improvement through exercise.

Besides pupils needing adjustments in physical education there will be those who need an increased amount of rest or who should be required to attend school only a half of each day. There will also be some who require special seating.

Whereas a member of the school health staff (physician or nurse) may be the one to discover need for an adapted program, the actual adaptation and the help which a pupil may need require active participation by the teacher. There is need for close cooperation between nurse, special guidance personnel where available, and the teacher of pupils requiring special programs.

It is best to modify a pupil's program while leaving him in his regular class and to enroll a pupil in a special class or school only when this will result in a better educational job than could be done by the regular class or when progress of pupils in the regular class is seriously hindered by the presence of the handicapped pupil. More than anything else, the handicapped pupil needs to accept his handicap and make the adaptations it requires. This can usually be accomplished most easily when he is associated with normal pupils.

Various types of handicapped pupils cannot satisfactorily cope with the regular school program, including those who are mentally subnormal and those with severe orthopedic deformities; also those with severe hearing impairment who need lip-reading instruction and those with severe vision impairment who need sight-conservation measures. Speech correction is needed by those who lisp, stutter or have other speech defects. Pupils with damaged hearts may need a restriction of stair climbing and a limitation of play. Those convalescing from prolonged sickness or operations may need rest periods.

It should be the policy of schools to adjust programs to the various needs and limitations of pupils.

It should be clear that while the school may modify its program for the crippled pupil, the convalescent or the one with poor vision or hearing, this adjustment does not imply responsibility for needed medical care. The school should first see that the pupil is receiving needed treatment and then adjust the school program with the approval of his physician. By such procedure the school can avoid the embarrassing situation of enrolling in a sight-saving class a pupil whose defective vision can be satisfactorily and completely corrected with glasses or providing lip reading for a pupil whose impaired hearing could be improved or corrected by the removal of dried wax or the removal of tonsils and adenoids.

### 8. SUPERVISION AND IN-SERVICE FOR TEACHERS (Abstract)

Schools should accept responsibility for providing supervision and in-service training for teachers and should place specific responsibility for coordinating all school health activities and for relating these to community health programs in the hands of some persons especially qualified in education and in school health work.

There are other functions of a supervisory nature for which the schools should provide. All school personnel, namely janitors, classroom teachers, teachers of home economics, physical education, biologic sciences and social studies as well as the more strictly health trained people—as physicians, nurses, dentists, dental hygienists and dietitians—are concerned with activities of the school health program. To coordinate these groups so that the school health program will be a smoothly functioning unit without friction or duplication requires considerable planning, effort and diplomacy. Besides coordinating the various threads of interest within the school, there is need of relating school health activities with the health interests of other groups, such as child welfare associations, departments of health, parent-teacher associations, medical and dental associations, and various clinics, hospitals and dispensaries.

## CONCLUSION

Throughout this statement, attention has been directed to school responsibilities for health education, health protection and health guidance as well as policies to be followed in meeting them. To the degree in which these responsibilities are met, schools contribute to the present and future health of pupils and their community. This contribution will be greatest when there is careful planning, well trained personnel and coordination of school efforts with those of others interested and concerned with child health and health education. As various groups work together on these problems, improved technics will be evolved, debatable issues decreased and more effective and efficient programs developed. The procedures of an individual school may profitably be compared with the policies and responsibilities listed in this report.

Policies change with time. What is considered good policy at the present time may not coincide with what was recommended several years ago, and the future will unquestionably modify present views. The committee is aware of this transient nature of policies but believes that progress and understanding are facilitated by clear-cut and definite statements of opinion. It hopes that this statement will contribute to the study, planning and improvement of school health programs and thus to progress in improving both the health of children and the communities in which they live.

# MEDICAL LEGISLATION

## MEDICAL BILLS IN CONGRESS

*Changes in Status.*—S. 3230 has been reported to the Senate, with amendments, to provide for the general welfare through the construction of needed hospitals and grants to states and political subdivisions thereof for the construction, improvement and enlargement of hospitals. An analysis of the reported bill appears elsewhere in this issue of THE JOURNAL. H. R. 9007, making appropriations for the Department of Labor, the Federal Security Agency and related independent agencies, has passed the Senate. An amendment was adopted in the Senate increasing from $5,000,000 to $7,000,000 the amount available for venereal disease control activities. The Senate rejected an amendment proposed on behalf of Senator Pepper, of Florida, to make available not to exceed $100,000 for researches, investigations and studies relating to the cause, diagnosis and control of pneumonia, influenza and the common cold.

*Bills Introduced.*—H. R. 9536, introduced by Representative Weaver, North Carolina, proposes to provide domiciliary, medical and hospital treatment to certain former members of the Army, Navy, Marine Corps and Coast Guard. H. R. 9576, introduced by Representative Randolph, West Virginia, proposes to establish certain requirements with respect to the admission to Saint Elizabeths Hospital of persons resident or domiciled in the Virgin Islands. S. 3855, introduced by Senator Bailey, North Carolina, would amend title X of the Social Security Act to provide for additional aid to the blind. S. 3910, introduced by Senator Walsh, Massachusetts, proposes to authorize the Administrator of Veterans' Affairs to furnish domiciliary and hospital care and medical treatment to World War veterans of the United States merchant marine. S. 3914, introduced by Senator Pepper, Florida, proposes a federal appropriation of not in excess of $3,000,000 for the fiscal year ending June 30, 1941, and for each fiscal year thereafter such sums as may be necessary to assist states, counties, cities, health districts and other political subdivisions to establish and maintain adequate measures for the prevention, treatment and control of pneumonia.

## STATE MEDICAL LEGISLATION

### Mississippi

*Bill Introduced.*—H. 1137, to revise the privilege tax code, proposes, among other things, to impose an annual privilege tax of $10 on "each physician, dentist, osteopath, chiropractor, podiatrist, chiropodist, oculist or naturopath, whether practicing alone or with another." The bill also proposes to levy an annual tax of $25 on each person engaged in the business of operating a clinical, bacteriologic or biologic laboratory.

# MEDICAL ECONOMIC ABSTRACTS

## RELATION OF THE ASSOCIATED HOSPITAL SERVICE PLAN TO THE MEDICAL PROFESSION

*Abstract of an article by Paul Keller, M.D., Medical Director, Associated Hospital Service of New York.*

The Board of Directors of the Associated Hospital Service of New York consists of eighteen members. Six of these are physicians appointed by the board of directors from a list submitted by each of the seventeen county medical societies in the metropolitan area including northern New Jersey.

This one third representation of the medical profession creates a definite sense of responsibility on the part of the profession. In addition, physicians serve in a medical advisory capacity to the claim department, so that cases of misunderstanding with individual doctors are clarified directly through the doctors' own organization. It is anticipated that this medical representation will further an educational program among physicians through medical staff meetings at member hospitals where representatives of the administrative staff may confer personally with individual medical staff groups.

### RELATIONSHIP OF THE CLAIM DEPARTMENT TO PHYSICIANS

It is recognized that it is impossible to operate the plan successfully without the full cooperation and coordination of the attending physician, whose opinion must at all times be respected by the personnel of the department. Nothing must be done that will alter the confidential relation between the doctor and the patient. To help achieve this objective, patients must be admitted with as little red tape as possible and their eligibility for hospital benefits must immediately be acted on by the Medical Review Board of the Associated Hospital Service.

The physician's certificate, which serves as a part of a hospital admission notice, is a request for the attending physician to furnish the diagnosis and other data necessary to a prompt decision by the Medical Review Board as to approval of a hospital claim. This physician's certificate gives the name, address, age, diagnosis and date when hospital care was first recommended.

The patient brings this certificate to the admitting clerk at the hospital. The information on this certificate enables the Medical Review Board to determine the disposition of the claim promptly. The great majority of such claims are approved automatically on the basis of the information given in the physician's certificate.

If the doctor chooses not to fill out this certificate or to withhold the diagnosis from the patient, he may give the information requested direct to the hospital admitting clerk or to the Associated Hospital Service claim department. Further consultation may be secured by telephonic contact with the doctor who handles admissions in the claim department.

In case a point of major difference arises between the claim department and the physician who has issued the certificate, this is presented to the Medical Advisory Committee for its decision.

### PREREVIEW OF ADMISSION NOTICES

When decisions prior to admission are made by virtue of correspondence, all details of the correspondence, or telephone conversation, are entered on a card which also shows the disposition. The notices of admission are then forwarded to a prereview clerk who is a registered nurse. This clerk, using a list of diagnoses on which there will be no question as to approval, determines which cases are obviously allowable. Such claims are classified as "Obvious Approvals" and immediately forwarded to the typing division so as to notify the hospital and subscriber of the approval.

### MEDICAL REVIEW OF CLAIMS

Approximately 75 per cent of the claims are classified in a routine way as "Obvious Approvals." The remainder, approximately 125 claims daily, are referred to a medical review board for determination as to approval or rejection on the basis of subscribers' contracts. It is often necessary to discuss cases with the physician to determine the actual facts and also to acquaint physicians with admission policies. As far as possible decisions are based on a standard interpretation in order to spare the physician an excessive amount of clerical work.

These standard provisions have been prepared to cover the most frequent medical controversial problems in the interpretation of hospital contracts. They cover such subjects as anesthesia, laboratory and x-ray examination, communicable diseases, pulmonary tuberculosis, admission solely for diagnostic purposes, preexisting conditions and venereal diseases. These standard interpretations apply principally to the exceptions in the contract, which are the source of most controversies as to admission.

# WOMAN'S AUXILIARY

### Arkansas

The auxiliary to the Bowie-Miller Counties Medical Society secured fifty-four subscriptions to *Hygeia* and also contributed $15 to the Arkansas Tuberculosis Association.

The auxiliary to the Franklin County Medical Society held its January meeting in Ozark. Members have placed *Hygeia* in the schools and public libraries and also contributed $20 to furnish milk to underprivileged children.

The auxiliary to the Ninth Council District Medical Society met in Harrison, where Dr. D. W. Goldstein of Fort Smith spoke on cancer at a joint meeting of the society and the auxiliary.

### California

The auxiliary to the Los Angeles County Medical Association met in Los Angeles on November 28. Dr. William H. Daniel, president of the Los Angeles County Medical Association, spoke on "Working Together"; Dr. Elizabeth M. Hohl, "Relief and Fraternal Relations," and Mr. Rex Thompson, superintendent, Department of Charities, County of Los Angeles, discussed care of the needy. Guests of honor at the meeting were the members of the board of trustees of the county medical association.

The auxiliary to the San Diego County Medical Society held a meeting, November 14, at the Sequoia Club and raised $125, which was given to the medical scholarship fund.

At a meeting of the auxiliary to the San Francisco County Medical Society, November 21, Ruth T. Storey, Ph.D., psychologist of the juvenile court, spoke on "Training the Child for Adjustment and Mental Health." Mrs. Frederick N. Scatena, president of the auxiliary to the California Medical Association, described the development of auxiliaries and urged the formation of new groups throughout the state. The principal philanthropic work of the auxiliary is to maintain a scholarship loan fund for senior medical students of the University of California and Stanford University medical schools. The auxiliary also donated $75 to a blind woman to assist her in purchasing a trained dog as guide.

The auxiliary to the Santa Barbara County Medical Society on November 13 had as guests Mrs. Frederick N. Scatena, president of the auxiliary to the California Medical Association, Mrs. Clifford Wright, immediate past president, and Mrs. E. Eric Larson, president of the auxiliary to the Los Angeles County Medical Association.

Dr. Ellis D. Sox, health officer of Tulare County, spoke on "Child Welfare" at the meeting of the auxiliary to the Tulare County Medical Society in Visalia, December 3.

An auxiliary to the Humboldt County Medical Society was organized January 12, with twenty-one charter members. Mrs. John N. Chain Sr., of Eureka, was named president.

### Florida

Mrs. L. C. Ingram, president of the auxiliary to the Florida Medical Association, spoke before the auxiliary to the Broward County Medical Society in Fort Lauderdale, February 13. The auxiliary assisted the Broward County Tuberculosis and Health Association by sending letters containing 5,000 Christmas seals during the annual Tuberculosis Seal Sale. The auxiliary, in cooperation with the Women's Field Army of the American Society for the Control of Cancer, sponsored a program on cancer control at the Fort Lauderdale Woman's Club recently. Posters and other exhibits on cancer were explained. Speakers on the program were Mrs. J. Ralston Wells, of the Women's Field Army; Dr. Leigh Robinson, president of the Florida Medical Association; Dr. R. L. Elliston, president of the Broward County Medical Society; Mrs. J. W. McMurray, chairman of the Welfare Department of the Woman's Club, and Mrs. B. D. Arnold, president, who presided at the meeting.

Rosalie Slaughter Morton, physician and author, talked on the life of the Finns, especially stressing the activities of the women, at a meeting of the auxiliary to the Orange County Medical Society in Orlando, January 23. Three health programs were arranged recently: Dr. Gilbert Osincup spoke on communicable diseases and their prevention, Dr. Spencer Folsom on the prevention and relief of heart disease at the Sorosis Club in Orlando, and Dr. L. C. Ingram and Dr. W. P. Rice on a program before the Parent-Teacher Association and school group. The auxiliary gave forty six-months' subscriptions to *Hygeia*, placing them in city and county schools, hospitals and libraries.

The auxiliary to the Pinellas County Medical Society held a meeting in St. Petersburg, January 13. Mrs. Francis Eaton reviewed "The Hudson," by Carl Carmer.

### Georgia

The auxiliary to the Sixth District Medical Society met recently in Macon. Mrs. Y. H. Yarbrough of Milledgeville was named president. Speakers on the program were Mrs. Eustace A. Allen, president of the auxiliary to the Medical Association of Georgia; Mrs. H. G. Banister, president-elect, and Mrs. J. Harry Rogers, chairman of the press and publicity committee of the auxiliary.

Three auxiliaries to county medical societies, Glynn, Brooks and Spalding, were organized in Georgia recently.

At recent meetings of the auxiliary to the Fulton County Medical Society held in Atlanta speakers were Dr. J. J. Clark, whose subject was radiology; Dr. C. E. Rushin, president of the Fulton County Medical Society, and Dr. Champney Holmes, who spoke on "What Price Tuberculosis?"

Mrs. Harold Atkinson reviewed "Rats, Lice and History," by Hans Zinsser, at a recent meeting of the auxiliary to the Bibb County Medical Society in Macon.

### Illinois

Four auxiliaries to county medical societies, Hamilton-Jefferson, Madison, Henry and Peoria, were organized recently in Illinois.

Dr. Fredrick Falls, Chicago, spoke on maternal welfare at a meeting of the auxiliary to the Coles-Cumberland Medical Society in Mattoon January 26.

Dr. William Whitaker spoke on "The Health of Our Youth of Today" at a meeting arranged by the auxiliary to the Adams County Medical Society held in Quincy, January 26.

At a meeting of the auxiliary to the Will-Grundy County Medical Society in Joliet, February 13, Miss M. McClenahan, director of health in Joliet High School, talked on "Why I Read *Hygeia*." The meeting was attended by public health nurses of the county and by members of the Parent-Teacher Association.

At the January meeting of the auxiliary to the Knox County Medical Society in Galesburg, one of the members reviewed "Triumph Over Pain," by Miller.

The auxiliary to the Sangamon County Medical Society held its annual health educational day meeting in Springfield, February 12. Mr. Baxter K. Richardson, of the Division of Public Health Instruction in Illinois, spoke on communicable diseases and showed three motion pictures on the following subjects: tuberculosis, diet and heredity. Also, Miss Dorothy Southwick, public school nurse in Springfield, discussed school health service.

The auxiliary to the Rock Island County Medical Society meets regularly in Moline. The annual Laity Day Tea was held at Augustana College April 30, at which time Dr. Caroline McDonald spoke on "After Forty, What?"

### Kansas

The Labette County Medical Society and its woman's auxiliary were guests of the staff of the state hospital in Parsons recently and were entertained by Mr. A. W. Day, who showed the moving picture "Tundra."

The auxiliary to the Sedgwick County Medical Society was entertained recently by Mrs. D. W. Basham, of Wichita, chairman of the Board of Public Relations of Wichita University Auxiliary. The auxiliary donated toys and games for the children at the County Hospital and placed *Hygeia* in sixteen rural schools in Sedgwick County.

### Kentucky

At the November meeting of the auxiliary to the Breathitt County Medical Society in Jackson Mrs. H. R. Parker read a paper on "Tuberculosis."

An auxiliary to the Calloway County Medical Society was reorganized in Murray recently. The auxiliary recently sponsored a health talk given before the Parent Teachers' Association.

The auxiliary to the Franklin County Medical Society entertained the wives of the physicians who attended the Sixth District of the State Medical Society in Frankfort recently. The auxiliary recently sent clothing, medicine and books to the Frontier Nursing Service, and contributed $150 toward the improvement of the Hospital for the Colored Citizens.

The auxiliary to the Jefferson County Medical Society met in Louisville recently. Mrs. A. B. Sawyer was the speaker. At a meeting of the Study Class of the auxiliary Dr. J. Duffy Hancock told of developments in medical economics; at the November meeting Dr. George A. Hendon spoke on "Fracture of the Hip in the Aged." The auxiliary sent clothing to the Frontier Nursing Service and gifts to patients at the Children's Free Hospital.

### Missouri

"The Handicapped Child" was discussed by Dr. Max Goldstein at a meeting of the auxiliary to the St. Louis County Medical Society in St. Louis recently. "Activities of the League of Nations on International Health" was discussed by Miss Lorene Pickett at the December meeting.

Dr. Edward Heller, Kansas City, spoke on "Advantages of the Basic Science Law of Missouri" before the auxiliary to the Lafayette County Medical Society in Lexington recently. At the November meeting of the auxiliary Mrs. E. L. Johnson read a paper on "The School Child and Its Health."

### New Jersey

The auxiliary to the Essex County Medical Society met in Newark recently. Mrs. Norma Bingham, of the Newark *Evening News*, spoke on Iceland.

The auxiliary to the Hudson County Medical Society met in Jersey City recently. Mr. Arthur Voorhes spoke on the rehabilitation of the blind. The auxiliary is supporting the sale of articles made by the blind.

### New York

At the February meeting in Albany of the auxiliary to the Albany County Medical Society Dr. Joseph Lawrence spoke on the Wagner Health Bill.

Dr. Edward Jones spoke on "New Treatment of Pneumonia" at the February meeting of the auxiliary to the Broome County Medical Society in Binghamton. The auxiliary sponsored an essay contest in the Binghamton schools and will continue it through the other schools of the county. The auxiliary will take charge of the work of the Women's Field Army of the American Society for the Control of Cancer in Broome County.

The auxiliary to the Rockland County Medical Society recently visited the New York State Reconstruction Home for crippled children at West Haverstraw.

### North Carolina

At a meeting of the directors of the auxiliary to the Medical Society of the State of North Carolina in Sanatorium Mrs. C. F. Strosnider, president, outlined the plan of work for the year, which includes a study of health laws and of socialized medicine and ways and means of raising funds to maintain the McCain Bed at the State Tuberculosis Sanatorium, Southern Pines. The bed is named in honor of Dr. and Mrs. P. P. McCain, and a sum of $1,426.66 has been raised toward its endowment.——The auxiliary has a Student Loan Fund amounting to $619.79, which is available to children of physicians unable to complete their education without aid. The auxiliary will support also a charity bed at the tuberculosis sanatorium in the western part of the state.

An auxiliary to the Craven County Medical Society was organized at New Bern recently. Mrs. R. S. McGeachy was elected president. Mrs. C. F. Strosnider, president of the auxiliary to the Medical Society of the State of North Carolina, spoke on the purposes of the auxiliary.

The auxiliary to the Ninth District Medical Society held its sixteenth annual meeting at Morganton at which Mrs. James W. Vernon, district councilor, presided. Mrs. A. A. Kent Jr. distributed copies of the pamphlet "Historical Facts in Regard to Our McCain Bed" and spoke on this objective of the auxiliary. The auxiliary to the Morganton Medical Society entertained the visiting women during the day and in the evening joined the doctors at a banquet at the community house.

### Pennsylvania

The auxiliary to the Bedford County Medical Society held an open meeting on cancer control in Bedford recently. Addresses by Dr. Stanley P. Reimann, Philadelphia, Dr. Norman A. Timmins, Bedford, and Dr. Eugene Kester, Bedford Valley, were followed by an open forum which created much interest.

Mrs. John H. Doane, president of the auxiliary to the Medical Society of the State of Pennsylvania, spoke before a meeting of the auxiliary to the Berks County Medical Society, Reading.

Mrs. Augustus S. Kech, president of the auxiliary to the American Medical Association, 1937-1938, spoke at a recent meeting of the auxiliary to the Blair County Medical Society in Altoona.

Dr. Francis F. Borzell, president-elect of the Medical Society of the State of Pennsylvania, spoke on "The Medical Insurance Plan" before the auxiliary to the Bucks County Medical Society in Doylestown.

The auxiliary to the Chester County Medical Society met at Darlington Resident Center, November 10. Miss Howey, personnel director of the center, spoke on the work of the institution. At the regular program meeting, following the luncheon, Mrs. John H. Doane, president of the auxiliary to the Medical Society of the State of Pennsylvania, spoke on the work of the state auxiliary. Dr. Edward L. Bortz, president-elect of the Philadelphia County Medical Society, spoke on "Pep After Forty" before the auxiliary to the Delaware County Medical Society in Chester.

Mrs. Ralph Forrester addressed the auxiliary to the Indiana County Medical Society, November 9, on "Tuberculosis"; the talk was illustrated by the motion picture "Let My People Live."

Mrs. John H. Doane, president, auxiliary to the Medical Society of the State of Pennsylvania, spoke at a meeting of the auxiliary to the Lehigh County Medical Society in Allentown.

The Mercer County Medical Society and the woman's auxiliary held a dinner meeting at the American Legion Home in Grove City. Miss Marie Tate gave her experiences as a missionary in Zagazig, Egypt.

The auxiliary to the Montgomery County Medical Society met in Norristown. Mr. Roy Jansen, a representative of the state medical society, presented "A Tour of the World in Posters," showing more than 100 modern posters.

The auxiliary to the Philadelphia County Medical Society met in Philadelphia. Dr. and Mrs. Louis H. Twyeffort spoke on "A Trip to Labrador," giving a description of a summer's work at the Grenfell Mission. Miss Martha Gibbons, a volunteer worker at the Grenfell Mission for many summers, exhibited handicraft made by the Grenfell Labrador Industries.

More than a thousand persons attended the two sessions of the cancer education meeting conducted by the auxiliary to the Washington County Medical Society in Washington. Speakers were Dr. George W. Ramsey, Mrs. Gustav Ketterer and Mrs. H. M. Welsh.

Dr. James P. Paul spoke on socialized medicine at a meeting of the auxiliary to the York County Medical Society in York.

### Utah

The auxiliary to the Salt Lake County Medical Society met on December 28. Dr. and Mrs. E. M. Neher showed motion pictures which they had taken in Egypt and Palestine.

The auxiliary to the Carbon County Medical Society met in Price, January 7. A paper on the "Ups and Downs of Weight" was read and "The Days of My Strength," by Anna Walter Fearn, was reviewed.

# Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

## ARIZONA

**New Superintendent of Health.**—Dr. Frederick P. Perkins, Phoenix, has been appointed secretary and state superintendent of public health of Arizona to succeed Dr. Coit I. Hughes, who is retiring. Dr. Perkins graduated at Louisville (Ky.) Medical College in 1906.

## CALIFORNIA

**Personal.**—Dr. James F. Percy, professor of clinical surgery (neoplasms), College of Medical Evangelists, Los Angeles, was guest of honor at a banquet, April 27, given by the French Hospital, where he has been attending surgeon since 1925.——Dr. Alvin E. Cerf, San Francisco, has been appointed a member of the board of medical examiners for the term expiring Jan. 15, 1944, succeeding Dr. Frederick W. Didier, Wheatland.

**Syphilis Survey.**—Grants have been made by the International Health Division of the Rockefeller Foundation and the California State Department of Health to support an epidemiologic and statistical study of syphilis in the San Joaquin local health district unit under the direction of Dr. Robert Dyar, Baltimore. According to the *American Journal of Public Health*, the study will last from three to five years and will include an analysis of the prevalence of syphilis and of the efficacy of control and treatment methods.

**Medicodental Meeting.**—At a meeting of the First District Dental Society and the Los Angeles County Medical Association in Los Angeles, May 16, the speakers will be Dr. Edward C. Rosenow, professor of bacteriology and immunology, University of Minnesota Graduate School of Medicine, Rochester, Minn., and William G. Skillen, D.D.S., professor of histology and embryology, Northwestern University Dental School, Chicago. Dr. Rosenow will discuss "Studies on the Relation of Dental Infection to Systemic Disease" and "Symptoms and Lesions Produced in Animals by the Inoculation of Streptococci Freshly Isolated from Dental and Other Foci of Infection." Dr. Skillen will speak on "Calcification, Development and Eruption of the Teeth, the Effects of Pregnancy, Prenatal and Postnatal Calcification, the Influence of Internal Secretions, Heredity." In the evening Dr. Rosenow's address will be entitled "Prevention and Elimination of Infections In and About Teeth and Other Foci of Infection: A Bacteriologic Dental and Medical Problem," and Dr. Skillen's, "Radiographic and Histologic Discussion of the Treatment of the Investing Tissues."

## CONNECTICUT

**Personal.**—Dr. Elliott P. Joslin, Boston, has been named honorary chairman of the division of medicine and public health of the committee on university development of Yale University, New Haven. Dr. Joslin graduated at Yale in 1890. In his new appointment Dr. Joslin succeeds the late Dr. Harvey Cushing. The aim of the committee is to secure additional endowment for the medical school so that its facilities may continue to expand.——Dr. Morton H. Chapnick has been appointed health officer of the city of Putnam.

**Unlawful for Physician to Recommend Contraceptives.**—In a recent decision, the Supreme Court of Errors of Connecticut said that a physician who counsels a married woman to use a spermatocidal drug and a device for the purpose of preventing conception is guilty of an unlawful act even though the woman consulted him professionally and despite the fact that in his judgment further pregnancies would be detrimental to the "general health" of the patient (*State* v. *Nelson; Same* v. *Goodrich; Same* v. *McTernan*, 11 A. [2d] 856). One Connecticut law declares it to be unlawful for any person to use any drug, medicinal article or instrument for the purpose of preventing conception; another brands as a principal any person who counsels another to commit an unlawful act. There was no ambiguity in either law, the court pointed out, and the fact that the legislature had repeatedly refused to amend the law relating to the use of contraceptives so as to except from its operation the use of a contraceptive prescribed by a physician was most persuasive that the legislature did not intend that there should be such an exception. "To permit the use of contraceptives," said the court, "in all cases when in the opinion of even an honest and reputable physician pregnancy would affect 'general health' might well make it available to most women in view of the commonly known ordinary incidence and normal consequences of that condition, while it would be in the power of less ethical and conscientious practitioners to extend the field of exemption indefinitely."

## DELAWARE

**Personal.**—Dr. William Edwin Bird, Wilmington, and Dr. Joseph S. McDaniel, Dover, have been reappointed to serve for two years as members of the state board of medical examiners.

**Society News.**—Dr. Thomas A. Johnson, Philadelphia, discussed "Terminal Regional Ileitis and Related Conditions" before the New Castle County Medical Society, Wilmington, April 18. A symposium on anemia was presented, March 19, by Drs. Robert O. Y. Warren and Edgar R. Miller, Wilmington, and George E. Farrar Jr., Philadelphia.

## ILLINOIS

**Another Typhoid Outbreak at Manteno Hospital.**—Newspapers reported, April 23, that six more typhoid carriers had been discovered and isolated at the Manteno State Hospital, bringing the total of isolated carriers at the institution to ninety-two. Three persons have died of typhoid at the hospital since April 7. None of the six new carriers was from a ward in which any of the three recent deaths occurred, it was stated. Five of the six are former typhoid patients. A search for carriers is still under way at the hospital under direction of Dr. Claude Milton Eberhart, Highland, of the state department of public health. The investigation followed an outbreak of typhoid at the institution last summer and fall when sixty deaths were reported.

**State Medical Meeting in Peoria.**—The one hundredth annual meeting of the Illinois State Medical Society will be held at the new Shrine Mosque and the Pere Marquette Hotel, Peoria, May 21-23, under the presidency of Dr. James H. Hutton, Chicago. Included among the out of state speakers will be:

Dr. Louis H. Newburgh, Ann Arbor, Mich., The Nature of Obesity.
Dr. Henry L. Barnett, St. Louis, Choice and Dosage of Chemotherapeutic Agents for Bacterial Infections.
Dr. Russell L. Haden, Cleveland, Selection of Cases of Splenectomy.
Dr. Tom D. Spies, Cincinnati, Diagnosis and Treatment of Common Deficiency Diseases in the Adult.
Dr. Wheelan D. Sutliff, New York, Pneumonia: Its Diagnosis and Treatment.
Dr. Charles W. Rucker, Rochester, Minn., Visual Field Changes.
Dr. Hugh R. Butt, Rochester, Clinical Application of Vitamin K.
Dr. Raymond A. Vonderlehr, Washington, D. C., Continuous Alternating Scheme of Treatment in the Control of Acquired Syphilis.
Dr. Jennings C. Litzenberg, Minneapolis, Organization of Obstetrical Work in Rural Hospitals.
Dr. Ralph K. Campbell, Madison, Wis., Menstrual Disorders During the Adolescent Period.

Dr. Leonard G. Rowntree, Philadelphia, will deliver the oration in medicine on "The Role of the Kidney in Cardiorenal-Vascular Disease," and Dr. Frank H. Lahey, Boston, the oration in surgery, on "Thyroid Disease: Its Diagnosis and Management." Included among other events taking place at the same time will be the meetings of the Physicians' Association of the Department of Public Welfare of the State of Illinois and the Central States Society of Industrial Medicine and Surgery and the veterans' service committee dinner. The woman's auxiliary to the state medical society will meet at the Pere Marquette and Jefferson hotels, May 20-22. One of the features of the Hall of Health, which will be held in the Peoria Armory, will be the display of pictures of pioneer physicians and surgeons.

### Chicago

**Dr. Carlson to Become Emeritus Professor.**—Anton J. Carlson, Ph.D., professor and chairman of the department of physiology, Division of Biological Sciences, University of Chicago, will become emeritus at the end of the current year, the university announces. Since 1929 Dr. Carlson has held a Frank P. Hixon Distinguished Service Professorship. This title will now go to Fred C. Koch, Ph.D., professor and chairman of the department of biochemistry at the university. No successor to Dr. Carlson in the department of physiology has been announced. Born in Sweden in 1875, Dr. Carlson came to the United States at the age of 16 and received his doctor's degree at Stanford University in 1902. In 1904 he joined the faculty of the University of Chicago, becoming pro-

fessor in 1914 and chairman of the department in 1916. Dr. Koch was born in Chicago in 1876. He took his master's degree at the University of Illinois and that of doctor of philosophy at Chicago in 1912, becoming professor in 1924. He is known for his studies in the field of hormones, enzymes and vitamins.

**Alumni Reunion.**—The annual faculty-alumni reunion of Northwestern University Medical School will be held May 24-25. A golf tournament at the Illinois Country Club will open the session. The scientific program will be devoted to a symposium on the gastrointestinal tract. The speakers will include:

William Windle, Ph.D., Evanston, Fetal Swallowing, Gastrointestinal Activity and Defecation in Amnio.
Dr. Arthur E. Mable, The Recognition and Treatment of Common Diseases of the Esophagus.
Dr. Eugene S. Talbot, The History, Use and Value of Gastroscopy.
Dr. Howard B. Carroll, Treatment of Gastrointestinal Hemorrhage.
Drs. Andrew C. Ivy and Gordon B. Fauley, Effect of Aluminum Phosphate on Mann-Williamson Dogs.
Dr. John A. Wolfer, Relation of Biliary Tract Disease to the Pancreatic Juice Reflux.
Dr. James P. Grier, Intestinal Obstruction, Prevention and Treatment —Use of the Miller-Abbott Tube.
Dr. Clifford J. Barborka, Recent Advances in Our Knowlege of Vitamin Therapy and Nutrition.
Dr. Edward W. Gibbs, One Thousand Appendectomies—Correlation Study.
Drs. Jerrold P. Nesselrod, Evanston, and Jay M. Garner, Winnetka, Disease of the Lower Colon.
Drs. James T. Case and Earl E. Barth, X-Ray Examination of the Gastrointestinal Tract.
Dr. Ivy and John S. Gray, Ph.D., Urogastrone.
C. Jefferson Farmer, Absorption of Vitamin C from the Gastrointestinal Tract.

The annual dinner will be held in the grand ballroom of the Drake Hotel. The entertainment of the evening will be supplied by the members of the graduating class under the title "Forty Frolics." Announcement is also made of the alumni luncheon in the Early American Room of the Hotel Pere Marquette, Peoria, May 22, during the annual session of the Illinois State Medical Society.

## KANSAS

**State Medical Meeting in Wichita.**—The eighty-first annual session of the Kansas Medical Society will be held at the Wichita Forum, Wichita, May 13-16, under the presidency of Dr. Clifford C. Nesselrode, Kansas City, and with the Sedgwick County Medical Society acting as host. Included among the out of town speakers will be:

Dr. William H. Olmsted, St. Louis, The Doctor's Own Diet.
Dr. Raymond W. McNealy, Chicago, Preoperative and Postoperative Management of Gallbladder Patients.
Dr. Dean M. Lierle, Iowa City, The Value of Diagnostic Bronchoscopy and Esophagoscopy in General Practice.
Dr. Stuart W. Harrington, Rochester, Minn., Diagnosis and Surgical Treatment of Diaphragmatic Hernias.
Dr. Arthur C. Curtis, Ann Arbor, Mich., Treatment of Edema.
Dr. Julian D. Boyd, Iowa City, The Part Played by Endocrine Disturbances in Pediatric Practice.
Dr. Cecil S. O'Brien, Iowa City, Ocular Signs of Certain Systemic Diseases.
Dr. Earl D. McBride, Oklahoma City, The Role of Surgery in Painful Feet.
Dr. Charles E. Galloway, Evanston, Ill., Prevention of Preeclamptic Toxemia.
Dr. Thomas Leon Howard, Denver, Differential Diagnosis of Abdominal Pain from a Urologic Viewpoint.
Alphonse M. Schwitalla, S.J., Ph.D., St. Louis, The National Aspects of Medical Economics.
Dr. Walter L. Palmer, Chicago, Treatment of Chronic Indigestion.
Dr. Ralph H. Major, Kansas City, Mo., Therapy in Pneumonia.
Dr. Soma Weiss, Boston, Cardiac Asthma and Pulmonary Edema.
Dr. Thomas G. Orr, Kansas City, Treatment of Acute Intestinal Obstruction.

At the annual banquet Mr. John E. Rogers, Tulsa, attorney and past president of the Tulsa Chamber of Commerce, will be the speaker. Kansas physicians on the program will include:

Dr. Daniel V. Conwell, Halstead, A Clinical Approach to the Migraine Problem—Preventive Treatment.
Dr. Charles C. Hawke, Winfield, Diagnostic Clinic on Feeblemindedness.
Dr. John W. Randell, Marysville, Tetanus—A Report of Three Cases.
Dr. Aaron A. Sprong, Sterling, Radiation of Leukemia.
Dr. Karl E. Voldeng, Wellington, Rectal Carcinoma.
Dr. Richard E. Speirs, Dodge City, Immediate Repair of Flexor Tendons.
Dr. Ray A. West, Wichita, A County's Approach to Medical Economics.
Erskine Wyman, Topeka, state industrial commissioner, The Physician's Responsibility in Industrial Work.
Dr. Fred P. Helm, Topeka, The State Board of Health and the Private Practitioner.
Dr. Orville R. Clark, Topeka, Spinal Anesthesia in General Surgery—Report of 400 Cases.

"A Day for the Secretary" has been set aside for girls employed in the offices of members of the state society. The program will be devoted to a discussion of speech, personality, office management and general problems confronting doctors' assistants. The woman's auxiliary will meet during the annual session of the state society, and the Kansas State Hospital Association will meet May 16-17.

## KENTUCKY

**Society News.**—Dr. Edwin C. Hamblen, Durham, N. C., addressed the Jefferson County Medical Society, Louisville, March 18, on the endocrine treatment of functional uterine bleeding and ovarian sterility, as a guest of the Louisville Obstetrical and Gynecological Society.——Dr. Joseph A. Bowen, Louisville, addressed the Whitley County Medical Society, Corbin, March 11, on "The Significance of Blood in the Urine."——Drs. Willard O. Tirrill Jr. and Albert Weinstein, Nashville, addressed the Christian County Medical Association, Hopkinsville, March 19, on "Practical Aspects of Sterility" and "Diagnosis and Treatment of Undulant Fever" respectively. Mr. Walker Higgins, Hopkinsville, pharmacist, spoke on "Some Important U. S. P. and N. F. Preparations."——Dr. Morris Flexner, Louisville, among others, addressed the Hardin County Medical Society, Elizabethtown, March 14, on "The Technic of Contraception."——Dr. Rankin C. Blount, Lexington, addressed the Harrison County Medical Society, Cynthiana, March 4, on "Management of the Psychoneurotic Patient."——At a meeting of the Boyd County Medical Society, Ashland, March 5, Dr. Everett R. Veirs, Ashland, discussed diseases of the ear and mastoids.

## MASSACHUSETTS

**University News.**—Dr. Charles R. Austrian, Baltimore, lectured at Harvard Medical School, Boston, April 2, on "The Care of the Patient." Donald D. Van Slyke, Ph.D., New York, delivered the annual Nu Sigma Nu lecture recently on "Renal Physiology."

**State Medical Meeting in Boston.**—The Massachusetts Medical Society will hold its one hundred and fifty-ninth annual meeting at the Copley-Plaza Hotel, Boston, May 21-22, under the presidency of Dr. Walter G. Phippen, Salem. Among the out of state speakers will be:

Dr. Reed M. Nesbit, Ann Arbor, Mich., Treatment of Prostatic Obstruction.
Dr. Wilson G. Smillie, New York, The Common Cold.
Dr. Esmond R. Long, Philadelphia, Pathogenesis of Primary and Reinfection Types of Pulmonary Tuberculosis.
Dr. Francis G. Blake, New Haven, Conn., Treatment of Pneumococcal Pneumonia.
Dr. Thomas Parran, Washington, D. C., The Public Health Aspects of Syphilis as It Concerns the General Practitioner.

A symposium on sulfanilamide will be presented Wednesday afternoon by the following: Drs. Conrad Wesselhoeft, "Management of Acute Streptococcal Infections of the Upper Respiratory Tract"; Joseph P. Cohen, "Treatment of Puerperal Sepsis"; Ernest Granville Crabtree, "Treatment of Urinary Tract Infections by Specific Therapy"; Chester S. Keefer, "Diagnosis and Treatment of Gonorrheal Arthritis"; Edwin H. Place, "Treatment of Meningococcus Meningitis," and Arthur M. Greenwood, "The Possible Skin Manifestations of Sulfanilamide." All the speakers are from Boston. Dr. Perrin H. Long, Baltimore, will give the summary. The Shattuck Lecture will be delivered at the annual dinner Tuesday evening by Dr. Ernest W. Goodpasture, Nashville, Tenn., on "Immunity to Virus Infections, Some Theoretical and Practical Considerations." Dr. William Jason Mixter will give the annual oration on "Neurologic Surgery in Massachusetts."

## NEW MEXICO

**State Medical Meeting.**—The annual session of the New Mexico Medical Society will be held May 27-29 at the Hotel Hilton, Albuquerque, under the presidency of Dr. George T. Colvard, Deming. The entire program will be presented by guest speakers. Among them will be:

Dr. Willis C. Campbell, Memphis, Tenn., Treatment of Acute Fractures of the Neck of the Femur.
Dr. John L. Emmett, Rochester, Minn., Renal Tuberculosis.
Dr. Ben D. Massey, Pasadena, Calif., Present Status of the Treatment of Urinary Infections.
Dr. Frederick S. Wetherell, Syracuse, N. Y., The Role of the General Practitioner in the Curing of Cancer.
Dr. Richard L. Sutton Jr., Kansas City, Mo., Skin Diseases: Diagnosis and Treatment.
Dr. Verne C. Hunt, Los Angeles, Gastric Surgery.
Dr. Ray M. Balyeat, Oklahoma City, Diagnosis and Treatment of the Common Allergic Manifestations as Seen by the General Practitioner.
Dr. Wilford W. Barber, Denver, Clinical Significance of Abdominal Pain in Children.
Dr. Albert Soiland, Los Angeles, Further Notes on the Clinical Aspect of Ultra Short Wavelength X-Rays.
Dr. Paul M. Bassel, Temple, Texas, Frequency of Spinal Cord Tumors and Their Diagnosis.

Dr. Wetherell will also address a luncheon meeting on medical economics; Dr. Sutton and Dr. James R. Jaeger, Denver, will present travelogues at an evening smoker, and Drs. Balyeat and Soiland will make luncheon addresses.

## NEW YORK

**Hospital Addition Dedicated at Binghamton.**—A new pavilion at the Binghamton City Hospital, which has been named the Doctors' Memorial Building, was dedicated with an all-day ceremony April 4. Dr. Morris Fishbein, Chicago, Editor of THE JOURNAL, made the dedicatory address in the morning, addressed a joint meeting of service clubs at a luncheon on "Medicine and the Changing Social Order" and a public meeting in the evening on "A Real National Health Program." The new hospital addition is six stories high and contains 113 private rooms and an auditorium. It is fitted with the most modern appointments and was erected at a cost of about $450,000.

**Society News.**—Dr. Samuel R. Meaker, Boston, addressed the Medical Society of the County of Albany in Albany, March 27, on "Management of Sterility by the General Practitioner."——Dr. Frederick A. Coller, Ann Arbor, Mich., addressed the Rochester Academy of Medicine, March 6, on "Fluid and Electrolyte Balance in the Surgical Patient."——Dr. Wilson G. Smillie, New York, addressed the Medical Society of the County of Monroe, Rochester, March 19, on "Trends in Public Health."—— Dr. Loring T. Swaim, Boston, addressed the Nassau County Medical Society, Garden City, March 26, on "Treatment of Arthritis: Practical Suggestions for the General Practitioner."——Drs. Samuel A. Thompson and Milton J. Raisbeck, New York, addressed the Medical Society of the County of Rensselaer, Troy, April 9, on "Surgical Treatment of Coronary Artery Disease."——Dr. Charles A. Weymuller, Brooklyn, addressed the Onondaga County Medical Society, Syracuse, April 2, on recent advances in pediatrics.

### New York City

**Meeting of Pharmacists.**—The Association for the Advancement of Professional Pharmacy in cooperation with the medical societies of Bronx, Kings, New York, Queens and Westchester counties has arranged a joint meeting to be held May 28 at the Hotel Pennsylvania. The topic to be discussed is "Medicine and Pharmacy in the American Health Program" with the following speakers: Dr. Terry M. Townsend, president, Medical Society of the State of New York; Dr. Nathan B. Van Etten, President-Elect of the American Medical Association; Robert L. Swain, Pharm.D., former president of the American Pharmaceutical Association, and Evander F. Kelly, Pharm.D., Washington, D. C., secretary of the American Pharmaceutical Association and editor of its journal.

**Society News.**—Drs. Thomas Francis Jr. and Ralph S. Muckenfuss addressed the Bronx County Medical Society, March 20, on "Recent Advances in Our Knowledge of Filtrable Virus Diseases."——Dr. Henry Dawson Furniss addressed the Bronx Gynecological and Obstetrical Society, March 25, on "Urethral and Vesical Fistulas."——Speakers at a meeting of the Medical Society of the County of Kings, March 19, were Dr. Albert F. R. Andresen, on "Medical Problems in Dentistry"; Dr. Walter A. Coakley, "Surgical Aspects of Diseases of Oral Origin"; Gustaf B. Johnson, D.D.S., "Dental Problems as They Affect the Physician," and Charles A. Wilkie, D.D.S., "Dental Diagnostic Problems."——At a meeting of the Brooklyn Thoracic Society, March 15, the speakers were Drs. Herman E. Wirth on "The Weltman Serum Coagulation Reaction in Pulmonary Tuberculosis"; Biagio Battaglia, "An Evaluation of Bed Rest Therapy in Clinical Pulmonary Tuberculosis," and Irving B. Gold, "End Results in Cases of Pulmonary Tuberculosis Treated by Artificial Pneumothorax."

**Long Island College Marks Eightieth Year.**—The Long Island College of Medicine held a banquet, March 29, at the Hotel Roosevelt celebrating the eightieth anniversary of its founding. Dr. Frank L. Babbott, president of the college, was toastmaster and the speakers were William Allan Neilson, Ph.D., president emeritus of Smith College, Northampton, Mass., and the Honorable Alfred E. Smith. The Long Island medical school began March 29, 1860, as the Long Island College Hospital, a hospital and medical school combined to place emphasis on clinical teaching. The faculty consisted of eight professors: Drs. Austin Flint, practical medicine and pathology; Frank H. Hamilton, surgery; James D. Trask, obstetrics and diseases of women and children; R. Ogden Doremus, chemistry and toxicology; Joseph C. Hutchison, surgical anatomy and operative surgery; John C. Dalton, physiology and microscopic anatomy; DeWitt C. Enos, general and descriptive anatomy, and Edwin N. Chapman, materia medica and therapeutics. A Dr. J. G. Johnson was demonstrator of anatomy. The first class had eighteen students. By 1870 a new building was necessary to accommodate larger numbers of patients with the growth of Brooklyn; in 1881 a journal was published by the staff; in 1883 a nurses' training school was organized. In 1888, Dr. Cornelius Hoagland established the first bacteriological laboratory in the United States. Another building was added in 1898 and early in the twentieth century a new hospital building was made possible by various donors. After the World War, clinical facilities of other Brooklyn hospitals were included in the teaching plan and as the school and hospital expanded it seemed wise to separate the two activities, and this was done in 1930. Since that year a laboratory for physiology, bacteriology and pathology and a recreation center have been given to the school. Long Island College of Medicine has graduated about 7,000 physicians. It now has a student body of 350. Among special guests invited to the banquet were Dr. James D. Trask, New Haven, Conn., grandson of Dr. James D. Trask, a member of the first faculty; Harry M. Ayres, Ph.D., grandson of Dr. Daniel Ayres, a member of the organizational faculty, and Mr. William H. Dudley, a grandson of Dr. William H. Dudley, a member of the first council.

## NORTH CAROLINA

**Society News.**—Dr. Edgar F. Fincher, Atlanta, Ga., addressed the Buncombe County Medical Society, Asheville, April 15, on "Brain Tumors."——At a meeting of the Mecklenburg County Medical Society, Charlotte, March 26, the speakers were Drs. Calvin Graham Reid on "Medical Treatment of Massive Gastric Hemorrhage"; James W. Gibbon, "Postoperative Gastrojejunal Ulcers" and William S. Cornell, "Selection of Patients with Gallbladder Disease."

**Grant for Syphilis Campaign.**—The Reynolds Foundation recently allotted $200,000 to continue the campaign against syphilis in North Carolina. Sixteen counties and eight cities have programs financed by funds provided by this foundation, matched by local contributions. Sixty other counties are receiving $158,000 from federal funds and the remaining twenty-four counties in the state do not participate in either fund. This is the third grant from the foundation and is twice the original grant.

**Hospital Conference in Winston-Salem.**—The Carolinas-Virginias hospital conference was held in Winston-Salem, April 4-6, with the following speakers, among others: Dr. Watson S. Rankin, Charlotte, "Economic Classification of Patients"; Earl W. Williamson, Chicago, "Hospital Standards and How to Meet Them"; Arnold Emch, Ph.D., Chicago, "Place of the Voluntary Hospital in the Federal Health Program." Dr. Frederick C. Hubbard, North Wilkesboro, was elected president of the North Carolina Hospital Association at a business meeting of that organization.

## OHIO

**Meeting of Anesthetists.**—The Ohio Society of Anesthetists will hold its annual meeting jointly with the annual meeting of the American Society of Anesthetists in Cincinnati, May 16. The day's program will include a demonstration at the Jewish Hospital of the technic of determination of peripheral blood flow by Dr. David I. Abramson and his staff. In the afternoon there will be addresses, among others, by Dr. Ralph M. Waters, Madison, Wis., on "The Relationship of Pain Relieving Drugs to Respiratory Morbidity"; Samuel Iglauer, Cincinnati, "Relation of the Respiratory Passages to Anesthesia," and Harry E. Landt, Cincinnati, "Experiments in Rebreathing."

**Professor of Biochemistry Dies.**—Glenn E. Cullen, Ph.D., professor of biochemistry at the University of Cincinnati Graduate School of Arts and Sciences and professor of pediatric research in the college of medicine since 1931, died, April 11, of coronary occlusion, aged 50. Dr. Cullen, a native of Ohio, took his doctorate at Columbia University in 1917. From 1913 to 1922 he was research chemist at the Rockefeller Institute for Medical Research, New York; from 1922 to 1924, associate professor of research medicine at the University of Pennsylvania School of Medicine, Philadelphia, and from 1924 to 1931 professor of biochemistry at Vanderbilt University School of Medicine, Nashville, Tenn. In addition to his teaching positions he had been director of laboratories of the Children's Hospital Research Foundation at Cincinnati since 1931. Dr. Cullen was a past president of the Society for Experimental Medicine and Biology and of the American Society of Biological Chemists; a member of the American Chemical Society, Harvey Society of New York, Society for Clinical Research, Society for Pediatric Research, American Institute

of Nutrition, American Academy of Pediatrics, National Research Council, American Association for the Advancement of Science and an associate member of the American Medical Association.

## OKLAHOMA

**Health Department to Open Library.**—The state health department is shortly to open a library in its offices in Oklahoma City with material available to public health workers and private physicians. Information will be furnished to physicians on request on prevalence and trends in diseases, and books on public health will be made available to health workers in units throughout the state.

**Society News.**—Dr. Frank M. Keen, Shawnee, addressed the Pottawatomie County Medical Society, Shawnee, recently on intestinal obstruction.——Drs. George E. Johnson and Weldon D. Blassingame addressed the Carter County Medical Society recently in Ardmore on "The Chronic Prostate" and "Diarrhea in Infants" respectively.——Drs. Wayne C. Bartlett and Arthur L. Ashmore, Wichita, Kan., addressed the Kay County Medical Society recently in Ponca City on "Goiter Surgery" and "Tuberculosis" respectively.——Dr. George H. Kimball, Oklahoma City, addressed the Osage County Medical Society, Pawhuska, recently on "Principles of Plastic Surgery."——Dr. Robert J. Crossen, St. Louis, addressed the Tulsa County Medical Society, Tulsa, March 25, on "Gynecologic Endocrine Disturbances."——Drs. Ernest M. Seydell and Wilbur G. Gillett, Wichita, Kan., addressed the Garfield County Medical Society, Enid, recently on "Acute Otitis Media" and "Lesions of the Visual Pathway," respectively.

## PENNSYLVANIA

**Outbreaks of Communicable Disease.**—Thirty cases of diphtheria were reported in and near Coatesville in the ten days preceding April 8, according to a newspaper account. Two children died. There were three cases in adults.——Six cases of typhoid with one death have occurred in Plumsteadville, a village in Bucks County, newspapers reported April 16.——The ninety-fifth person in Luzerne County to be stricken with meningitis since January 1 was reported April 26; the twenty-ninth death occurred April 12 in Wilkes-Barre.

**Public Health Association Meeting.**—The fifteenth annual meeting of the Pennsylvania Public Health Association will be held at the headquarters of the Philadelphia County Medical Society, Philadelphia, May 23, under the presidency of Mr. Harold H. Keller, Philadelphia. Among the speakers will be:

Dr. Paul A. Keeney, Harrisburg, Opportunity for Practicing Physicians to Advance Public Health Work.
Dr. Joseph W. Mountin, U. S. Public Health Service, Washington, D. C., Correlation of State and Local Public Health Service.
Major Gen. Charles R. Reynolds, Harrisburg, Pennsylvania's Tuberculosis Program.
Dr. Reginald M. Atwater, New York, Our Professional Opportunity Today.

At a luncheon meeting Dr. John J. Shaw, state secretary of health, will speak on "Pennsylvania's Public Health Program" and at the banquet in the evening Dr. Edward S. Godfrey Jr., state health commissioner of New York, Albany, will speak on "A Modern Health Program."

### Philadelphia

**Dinner to Dr. Shaw.**—More than 200 physicians honored Dr. John J. Shaw, state secretary of health, at a testimonial dinner at the Union League, April 25, in recognition of his official services and the recent award to him of the Strittmatter Prize by the Philadelphia County Medical Society. Dr. Rufus Reeves, president of the county medical society, presided at the dinner and the speakers were: Hon. Robert E. Lamberton, mayor of Philadelphia; Drs. Charles H. Henninger, Pittsburgh, president of the Medical Society of the State of Pennsylvania, Erval R. Coffey of the U. S. Public Health Service, Washington, D. C., and Jesse Lynn Mahaffey, commissioner of health of New Jersey, Trenton; Thomas S. Gates, LL.D., president of the University of Pennsylvania, and Mr. Harold H. Keller, president of the Pennsylvania Public Health Association.

### Pittsburgh

**Institute for Negro Physicians.**—The first Postgraduate Institute on Public Health for Negro Physicians to be held in Pennsylvania was conducted in Pittsburgh April 28 to May 2 under the auspices of the Tuberculosis League of Pittsburgh, the Pennsylvania Tuberculosis Society and the Pennsylvania Medical, Dental and Pharmaceutical Society. Subjects discussed included tuberculosis, syphilis, maternal welfare and child health. Guest teachers included Drs. Howard M. Payne, of Howard University College of Medicine, Washington, D. C., on tuberculosis and Theodore K. Lawless, Chicago, on syphilis.

**Society News.**—Speakers at the annual meeting of the Allegheny County Medical Society, May 14, will be Drs. James Alexander Clarke Jr., Philadelphia, on "Clinical Importance of Minor Allergic Conditions"; Fredrick A. Willius, Rochester, Minn., "Coronary Disease"; Arthur M. Shipley, Baltimore, "The Acute Surgical Abdomen" and Thomas Francis Jr., New York, "Progress of Studies in Influenza." Speakers before the society, April 16, were Drs. Ernest W. Willetts and Verner B. Callomon, on "Treatment of Pneumococcic Pneumonia," discussing sulfapyridine and sulfathiazole, respectively; Paul B. Steele, "New Treatment for Perthes' Disease"; Robert C. Grauer, Chester F. Beall and George R. Wilson, "Clinical Use of Stillbestrol in Menopause and Postpartum Cases."——The Pittsburgh Orthopedic Club at a meeting, March 28, presented a symposium on "Low Back and Referred Pain" with the following speakers: Drs. Harry M. Margolis, Stuart N. Rowe, Leslie H. Osmond, Richard C. Ritter, John Huber Wagner and Mayer S. Deroy.——Dr. Clyde Leroy Deming, New Haven, Conn., addressed the Pittsburgh Urological Association, April 8, on "A Clinic's Experience with Tumors of the Genito-Urinary Tract."——Dr. Richard B. Cattell, Boston, addressed the Pittsburgh Academy of Medicine, April 9, on "Cancer of the Rectum."

## SOUTH DAKOTA

**State Medical Meeting at Watertown.**—The annual meeting of the South Dakota State Medical Association will be held in Watertown, May 20-22. Among the speakers will be:

Dr. Ralph K. Ghormley, Rochester, Minn., Choice of Bone Graft Methods in Bone and Joint Surgery; Nonoperative Fracture Treatment.
Dr. Raymond N. Bieter, Minneapolis, Serum and Specific Chemotherapeutics of Pneumococcus Infections; Newer Drug Therapy.
Dr. Louis A. Brunsting, Rochester, Minn., Helps in Treatment of Common Diseases of the Skin.
Dr. Albert V. Stoesser, Minneapolis, Preventive Allergy in Infancy and Childhood.
Dr. Robert G. Allison, Minneapolis, X-Ray Therapy.
Dr. John W. Duncan, Omaha, Diagnosis and Treatment of Carcinoma of the Breast.
Dr. Charles B. Wright, Minneapolis, subject not announced.
Dr. John M. Waugh, Rochester, Minn., Endometriosis.
Dr. William A. O'Brien, Minneapolis, subject not announced.
Dr. Frank W. Haas, Yankton, Insulin and Metrazol Treatment of Mental Diseases.
Harold D. McEwen, Ph.D., Vermilion, Some Recent Advances in Our Knowledge of Vitamins.

## TENNESSEE

**Society News.**—At a meeting of the Dyer, Lake and Crockett Counties Medical Society in Dyersburg, April 3, the speakers were Drs. William P. Watson, Dyersburg, on "Carcinoma of the Uterus"; Mike W. Holehan, Memphis, "Etiology, Pathology and Rational Treatment for Hemorrhoids," and Dick C. McCool, Memphis, "The Nervous Breakdown."——Drs. Matthew Wilson Searight and Henry B. Gotten, Memphis, addressed the Fayette and Hardeman Counties Medical Society recently on "Organotherapy in Gynecology" and "Differentiation of Organic and Referred Symptoms of Heart Disease in Middle-Aged People" respectively.——Dr. Ralph H. Monger, Knoxville, led a round table discussion at a meeting of the Sullivan-Johnson Counties Medical Society, Kingsport, April 3, on "Value of Laboratory Procedure in Bedside Medicine."——Dr. James P. Rousseau, Winston-Salem, N. C., addressed the Washington County Medical Society, Johnson City, April 4, on "Roentgen Therapy in Infectious Diseases."

## VIRGINIA

**Semiannual University Postgraduate Clinic.**—The twenty-fifth semiannual postgraduate clinic was presented by the University of Virginia Medical Department at Charlottesville, April 5-6. A special feature was the first James Carroll Flippin Memorial Lecture, in honor of the late Dean Flippin. The lecture was delivered by Dr. William McCully James, Panama, R. P., on "Observations of Malaria." Dr. James also presented a paper on amebiasis. Other speakers on the program were:

Dr. John W. Oliphant, U. S. Public Health Service, Washington, D. C., The Present Status of Influenza Research.
Dr. Edward Francis, U. S. Public Health Service, Washington, Tularemia.
Dr. Albert V. Hardy, consultant in the U. S. Public Health Service, New York, Undulant Fever.
Dr. Joseph Earle Moore, Baltimore, Syphilis.
Dr. Rolla Eugene Dyer, U. S. Public Health Service, Washington, The Rickettsial Diseases.

## WASHINGTON

**State Obstetric Meeting.**—The Washington State Obstetrical Association held its spring meeting in Seattle, April 6, with the following speakers, among others: Drs. Byron F. Francis, "Tuberculosis in Pregnancy"; Frederick B. Exner, "Significance of Thymic Enlargement"; Hugh H. Nuckols, Seattle, "Recurring Fetal Abnormalities," and John F. Fiorino, Everett, "The Use of Testosterone Propionate in Gynecology." An afternoon session was devoted to round table discussions on antepartum care, classification and mensuration of the pelvis and obstetric analgesia and anesthesia.

## WEST VIRGINIA

**Society News.**—Dr. Silas H. Starr, Louisville, Ky., addressed the Fayette County Medical Society, Montgomery, April 9, on "Toxemias of Pregnancy."——Dr. George P. Muller, Philadelphia, addressed the Ohio County Medical Society, Wheeling, April 5, on acute appendicitis. The speaker on April 19 was Dr. Louis J. Karnosh, Cleveland, on "Neuralgia, Neuritis and Neurosis."——The spring meeting of the Greenbrier Interstate Medical and Surgical Society was held at White Sulphur Springs, April 6, with the following speakers: Drs. James Edwin Wood Jr., Charlottesville, Va., "Recent Advances in Hypertension and Their Practical Significance"; Claude C. Coleman, Richmond, Va., "Treatment of Neurosurgical Lesions Causing Chronic Pain About the Shoulder Girdle and Lower Back"; Richard Kovacs, New York, "Spas and Health Resorts in the United States and Abroad," and Bror S. Troedsson, Orange, N. J., "Recent Research in Refrigeration Therapy."

## HAWAII

**Postgraduate Lectures.**—Dr. Isidor S. Ravdin, George Leib Harrison professor of surgery, University of Pennsylvania School of Medicine, Philadelphia, will present a series of postgraduate lectures under the auspices of the Honolulu County Medical Society during May. He will address the Hawaii Territorial Medical Association at its annual session on Maui, May 17-19. He will then lecture for two days in Hilo, following which he will return to Honolulu to conduct a two weeks course.

## GENERAL

**Ex-Residents of American Hospital of Paris.**—During the annual session of the American Medical Association, New York, all ex-residents of the American Hospital of Paris are invited to attend a dinner to be held at Charles French Restaurant, 452 Sixth Avenue, June 13, 7 p. m. Further information may be had from Dr. John R. Murphy, 121 East Sixty-First Street, New York.

**Dr. Meyer Heads National Committee for Mental Hygiene.**—Dr. Adolf Meyer, Baltimore, has been elected president of the National Committee for Mental Hygiene, the board of directors announces. He succeeds Dr. Arthur H. Ruggles, Providence, R. I. Dr. Meyer collaborated with Clifford Beers in the founding of the committee in 1909 and gave the mental hygiene movement its name.

**No June Examinations in Dermatology.**—In view of the small number of applicants who have signified their intention of taking the examination of the American Board of Dermatology and Syphilology in June at the time of the meeting of the American Medical Association in New York, the board will not hold an examination at that time. The next examination will be held immediately before the meeting of the American Academy of Dermatology and Syphilology next December in Chicago.

**Fraudulent Salesman.**—A Wisconsin physician reports the activities of a salesman of medical supplies who gave the name J. R. Rodgers and claimed to represent "Rodgers and Company" of Chicago. He took an order for a medicine case fitted with bottles, thermometers, syringes and other supplies. When the materials did not arrive the physician wrote a letter to the address given and his letter was returned marked "Not There." This man was about 5 feet 8 inches tall, about 55 years of age and wore a thirty-second degree Masonic emblem.

**Society News.**—Dr. Forrest L. Loveland, Topeka, Kan., was made president of the National Conference on Medical Service at its meeting in Chicago recently and Dr. Harold M. Camp, Monmouth, Ill., was chosen secretary.——Dr. Arthur G. Cranch, New York, addressed the International Acetylene Association at its annual meeting in Milwaukee, April 10-12, on "Health Aspects of the Oxyacetylene Process." Drs. Adolph G. Kammer, East Chicago, Ind., Oscar A. Sander, Milwaukee, and Eugene L. Walsh, Chicago, discussed the paper.

**Fraternity Luncheons.**—The medical fraternities Phi Beta Pi and Omega Upsilon Phi will hold a joint luncheon at the Hotel Waldorf-Astoria at noon Wednesday, June 12. Dr. Frederick Lee Liebolt, 14 East Ninetieth Street, New York, is the chairman.——The annual Nu Sigma Nu luncheon will be held at the Hotel Waldorf-Astoria, New York, Wednesday, June 12. The meeting will be in charge of the New York Alumni Association, of which Dr. Arthur F. Warner, 667 Madison Avenue, New York, is president. Dr. Thomas Turlay Mackie will be the chief speaker.

**Pacific Coast Surgical Meeting.**—The Pacific Coast Surgical Association held its annual meeting in Portland, Ore., April 3-6, under the presidency of Dr. Richard B. Dillehunt, Portland. Among the speakers were Drs. Edwin E. Osgood, Portland, on "Comparative Effectiveness of Chemotherapeutic Agents in Staphylococcus Viridans Infections of Marrow Culture"; Thomas M. Joyce and Frank R. Menne, Portland, "Uncommon Tumors of the Cervical Region," and Charles T. Sturgeon, Los Angeles, "Hypopharynx." Dr. Sturgeon was elected president; Drs. Homer D. Dudley, Seattle, and William K. Livingston, Portland, were elected vice presidents and Dr. Harry Glenn Bell, San Francisco, was reelected secretary. The 1941 meeting will be in Los Angeles in February.

**Phillips Medal Awarded to Dr. Dubos.**—The American College of Physicians at its annual meeting in Cleveland, April 4, awarded the John Phillips Memorial Medal to René J. Dubos, Ph.D., associate member of the Rockefeller Institute for Medical Research, New York, for his work in isolating from soil micro-organisms chemicals effective against pathogenic bacteria. Dr. Dubos delivered a paper entitled "Effect of Specific Agents Extracted from Soil Micro-Organisms on Experimental Bacterial Infections." A native of France, Dr. Dubos took his doctorate at Rutgers University, New Brunswick, N. J., in 1927, working as research assistant in soil microbiology at the New Jersey Experiment Station from 1924 to 1927. He has been associated with the Rockefeller Institute since 1927.

**American Laryngological Association.**—The sixty-second annual meeting of the American Laryngological Association will be held, May 27-29, at the Westchester Country Club, Rye, N. Y., under the presidency of Dr. James A. Babbitt, Philadelphia. Among the speakers will be:

Dr. Ralph A. Fenton, Portland, Ore., Certain Reactions of Laryngeal Tissues to Medicinal Agents.
Dr. Chevalier Jackson, Philadelphia, honor guest, Myasthenia Laryngis.
Dr. Frank R. Spencer, Boulder, Colo., Benign and Malignant Tumors of the Jaw.
Drs. Lee W. Dean, Alfred J. Cone and Sherwood Moore, St. Louis, Use of Laminagrams in Laryngology.
Dr. Samuel Salinger, Chicago, Radium in Carcinoma of the Larynx.
Dr. Westley M. Hunt, New York, Interrelations of the Ductless Glands and Otolaryngology.
Dr. John L. Myers, Kansas City, Mo., Influence of Tobacco Smoking on Health.

**Regional Meeting on Physical Therapy.**—The Southeastern section of the American Congress of Physical Therapy will hold a seminar and scientific program, May 20-21, in Atlanta, Ga., at the Atlanta Biltmore Hotel. The speakers will include:

Dr. Earl C. Elkins, Rochester, Minn., High Frequency Currents in Medicine.
Dr. William K. Ishmael, Oklahoma City, Combined Autohemotherapy and Fever Therapy in Rheumatic Disease.
Dr. Nathan H. Pulmer, New Orleans, Physical Therapy in Fractures.
Dr. John D. Currence, New York, Newer Developments in the Treatment of Arthritis.
Dr. Walter J. Zeiter, Cleveland, Clinical Application of Short Wave Diathermy.

One session will be held jointly with the Fulton County Medical Society.

**Officers of Biologic Societies.**—At the annual meeting of the Federation of American Societies for Experimental Biology in New Orleans in March officers were elected in the individual societies as follows, according to *Science:*

American Physiological Society: Dr. Andrew C. Ivy, Chicago, president, and Philip Bard, Ph.D., Baltimore, reelected secretary.
American Society of Biological Chemists: William C. Rose, Ph.D., Urbana, Ill., president; Rudolph J. Anderson, Ph.D., New Haven, Conn., vice president, and Charles G. King, Ph.D., Pittsburgh, secretary.
American Society of Pharmacology and Experimental Therapeutics: Drs. Eugene M. K. Geiling, Chicago, president; Carl F. Schmidt, Philadelphia, vice president, and Gustave P. Grabfield, Boston, secretary.

American Society for Experimental Pathology: Dr. Shields Warren, Boston, president; Dr. Jesse L. Bollman, Rochester, Minn., vice president, and Dr. Harry P. Smith, Iowa City, secretary.

The 1941 meeting of the federation will be held in Chicago in April.

**Changes in Status of Licensure.**—The Massachusetts Department of Registration in Medicine announces the following:

Dr. William M. Walsh, Dorchester, license restored, February 29.

The Minnesota State Board of Medical Examiners announces the following:

Dr. Iver S. Benson, Willmar, license revoked Nov. 3, 1939, following his conviction for performing a criminal abortion.

The New York State Education Department reports the following:

The license of Dr. Harold E. Simmonds, Colorado Springs, Colo., which was suspended in 1937, was restored in November 1939.

Dr. Benjamin Auster, New York, license restored February 29, after six months' suspension.

Dr. Sidney Monte Barth, Brooklyn, license restored recently after six months' suspension.

**Association on Mental Deficiency.**—The sixty-fourth annual convention of the American Association on Mental Deficiency will be held at Haddon Hall, Atlantic City, N. J., May 22-25, under the presidency of Fred Kuhlmann, Ph.D., head of the bureau of mental examinations, state division of social welfare, St. Paul. The program will include the following papers, among others:

Dr. Harry Moskowitz, New York, Benzedrine Therapy in the Mentally Handicapped.

Dr. William Mary Stephens, Chicago, Preliminary Report on Study of Vitamin C Effects in Truant Children in Chicago Parental Home.

Harold Himwich, Ph.D., Albany, N. Y., Cerebral Metabolism in Mongolian Idiocy and Phenylpyruvic Oligophrenia.

Dr. Joseph F. Hughes, Philadelphia, Some Electrical Signs of Central Nervous System Activity.

George B. Kreezer, Ph.D., Letchworth Village, Thiells, N. Y., Electroencephalographic Studies of the Mentally Deficient: Some Theoretical Implications.

Dr. S. Bernard Wortis, New York, Retinitis Pigmentosa and Associated Mental Deficiency.

Dr. George A. Jervis, Thiells, N. Y., Neuropathologic Studies in Mental Deficiency.

**Awards for Observations on Epilepsy.**—The recently organized Laymen's League Against Epilepsy announces two annual awards of $100 each for the best original unpublished observations or investigations bearing on the subject of epilepsy. One award will be made for work done in a state epileptic colony or mental hospital the other for work done elsewhere. Clinical as well as laboratory studies will be welcomed, the announcement states. Since one object of the award is to encourage junior workers, the committee will take into consideration the facilities of the authors. The committee will consist of the president of the American League Against Epilepsy, the chairman of the section on convulsive disorders of the American Psychiatric Association and a third physician chosen by the officers of the Laymen's League. It is hoped that winning contributions will be presented before the annual joint scientific session of the first two of these organizations. Contributions should be submitted by next December 15. Further information can be obtained from the secretary of the Laymen's League, Mrs. N. Bond Fleming, 25 Shattuck Street, Boston.

**Bequests and Donations.**—The following bequests and donations for medical purposes have recently been announced:

Presbyterian and Children's Memorial hospitals, Chicago, $50,000 each by the will of the late James Simpson for endowment of the Mr. and Mrs. James Simpson Memorial Wards.

University of Rochester, New York, a gift of $45,000 from Ernest L. Woodward to support research on epilepsy by Dr. William P. Van Wagenen, associate professor of neurologic surgery at the school of medicine.

St. Luke's Hospital, New York, $10,000 from an anonymous donor for research in cancer.

Jewish Hospital, Philadelphia, $31,089 from the estate of Simon Silberman, who died in 1883; the bequest became available on the death of Mr. Silberman's daughter recently.

St. Luke's Hospital, Bethlehem, Pa., $200,000 from the Bethlehem Steel Company to aid in financing an addition to the hospital.

Germantown Hospital and Dispensary, Philadelphia, $16,000 by the will of the late Elizabeth Witte.

Hospital for Joint Diseases, New York, $10,000 by the will of the late Miss Ida Meyer.

Swedish Covenant Hospital, Chicago, $8,000 by the will of the late Dr. Oscar E. Grant.

Methodist Hospital, Brooklyn, $2,500 by the will of the late Sarah E. Spence.

St. Mary's Hospital, New York, $50,000; Long Island College, St. Peter's, Wyckoff Heights, St. Catherine's and St. Vincent's hospitals, Brooklyn; Mary Immaculate Hospital, Jamaica, $30,000 each by the will of the late Mrs. Marie S. Engert-Colman, Brooklyn.

Victory Memorial Hospital, Waukegan, Ill., $250,000, and Evanston Hospital, Evanston, Ill., $250,000 by the will of Mrs. Clara A. Abbott, widow of Dr. Wallace C. Abbott, founder of the Abbott Laboratories, North Chicago, Ill.

## CANADA

**Society News.**—Dr. Herman L. Kretschmer, Chicago, addressed the Academy of Medicine of Toronto, March 5, on "The Present Status of Transurethral Resection."——Dr. David D. Freeze, Vancouver, addressed the Vancouver Medical Association, March 5, on "Trends in Anesthesia."

**Personal.**—Dr. Wilder G. Penfield, professor of neurology and neurologic surgery, McGill University Faculty of Medicine, Montreal, has been elected president of the Royal College of Physicians and Surgeons of Canada.——Dr. Gregoire F. Amyot, recently professorial lecturer in preventive medicine and public health at the University of Minnesota Medical School, Minneapolis, has been appointed health officer of British Columbia and secretary to the provincial board of health. Dr. Amyot was for several years director of the North Vancouver health unit and later adviser on hospital services and assistant to the provincial health officer. He also served in 1938 on the field staff of the American Public Health Association in making surveys of state health administration.——Drs. William V. Cone and Colin K. Russel, Montreal, are to head a neurologic unit for overseas war duty, it is reported. The unit will comprise fourteen officers, twenty-one nurses and a full complement of technicians, with facilities for the care of 200 patients. Dr. Cone is to be in charge of neurosurgery and Dr. Russel of neurologic service, it was said.

## FOREIGN

**Meetings Postponed.**—The sixth International Congress for Experimental Cytology, which was to have been held in Stockholm, Sweden, July 25 to August 1, has been postponed indefinitely.——The International Union Against Tuberculosis announces that the award of the Léon Bernard Memorial Prize has been postponed for two years because of the present situation.——The second International Congress of Eugenics has been postponed indefinitely, according to *Science*. Further information may be obtained from the secretary, Prof. George K. Constantinesco, National Zootechnical Institute, Strada Dr. Staicovici 63, Bucharest, Rumania.

**Joliot-Curies Receive Barnard Medal.**—Frederic Joliot and his wife, Mme. Irene Joliot-Curie, co-workers in the Radium Institute of Paris, recently received the 1940 Barnard Gold Medal for Meritorious Service to Science through the National Academy of Sciences of the United States. This medal was established by the late Frederick A. P. Barnard, president of Columbia University, New York, from 1864 to 1889, to be awarded every five years for a discovery in physical or astronomical science. The Joliot-Curies were honored for their discovery of artificial radioactivity. Mme. Joliot-Curie is the eldest daughter of Pierre Curie and Madame Marie Curie, discoverers of radium. Five years ago the couple received the Nobel Prize in chemistry for their work.

## CORRECTIONS

**Fluidrachms Instead of Fluidounces in Methyl Salicylate Ointment.**—In Cecil's article in THE JOURNAL, April 13, on "The Therapy of Rheumatic Fever," the amount of methyl salicylate in prescription 1, page 1444, should read 10 fluidrachms instead of fluidounces.

**Relief of Symptoms of Major Trigeminal Neuralgia (Tic Douloureux).**—In the article by Borsook, Kremers and Wiggins in THE JOURNAL, April 13, the third paragraph of the summary, page 1423, should have read: "Of four patients with sphenopalatine neuralgia, two were markedly improved and two improved. Three patients with atypical facial neuralgia may have had some slight improvement; six were unimproved."

**University of Buffalo School of Medicine.**—In connection with the figures for the University of Buffalo School of Medicine, on pages 1637 and 1641 of the State Board Number of THE JOURNAL, April 27, and in particular the percentage failing state board examinations, attention is called to the fact that since 1937 the students of this school have been required to pass part I of the examination of the National Board of Medical Examiners. Many students voluntarily complete the examinations of the National Board and secure licensure on this basis instead of taking those given by the state licensing boards. The University of Buffalo reports that forty-five of the sixty-one students in the class of 1939 passed part II of the examinations of the National Board last year. Including this number in the group who were examined for licensure would materially change the percentage of failures shown in tables 2 and 4.

# Foreign Letters

## LONDON

*(From Our Regular Correspondent)*

April 6, 1940.

### The Chemotherapy of Protozoal Infections

At the Royal Society of Tropical Medicine Prof. Warrington Yorke described recent work on the chemotherapy of protozoal infections. These arose as a direct development of investigations on the metabolism of trypanosomes. It was first shown that Trypanosoma lewisi survived longer in citrated blood at 17 C. if dextrose was added; later that dextrose was essential for maintaining pathogenic trypanosomes alive in vitro at 37 C. and that enormous amounts were consumed in their metabolism. Experimentally infected animals had hypoglycemia in the agonal or preagonal stage. In 1935 it was found that the changes in trypanosomes produced by germanin were similar to those produced in vitro by removing sugar from the nutrient medium, and it was concluded that this drug acted by interfering with their carbohydrate metabolism. This led to examination of the action of the hypoglycemia-producing guanidine derivatives in experimental trypanosomiasis. A number of these derivatives, especially synthalin, had a definite therapeutic action on mice infected with Trypanosoma brucei. It was first thought that synthalin acted by maintaining hypoglycemia and it was found to have a definite therapeutic action on rats infected with Trypanosoma equinum. But Yorke and Lourie found that the drug had a direct trypanocidal action in vitro like that of the trivalent arsenicals and that in normal animals it did not produce pronounced hypoglycemia unless in doses which damaged the liver. This discovery opened a wide field of investigation, especially as to the chemical constitution of synthalin, which consisted of two guanidine groups connected by an alkyline chain and was essentially different from all known trypanocides. This led to preparing a large number of compounds for testing their trypanocidal effect. It was found that certain diamidines were powerful both in vitro and in vivo. The most active diamidinoundecaine cured almost 100 per cent of mice and rabbits experimentally infected with Trypanosoma rhodesiense. The structural feature of all the compounds examined was a central inert carbon chain with terminal strongly basic polar groups. It seemed that this carbon group might merely serve as a carrier of active groupings and might be replaced by an inert aromatic structure of approximately the same molecular weight. A number of aromatic amidine and guanidine compounds were therefore prepared and several were found to be trypanocidal. Among these diamidinostilbene cured the great majority of mice infected with Trypanosoma rhodesiense. Its therapeutic index (ratio of maximum tolerated dose to minimum curative dose) was about 30. These compounds compared favorably with the aromatic arsenicals.

Preliminary reports of clinical trials in human trypanosomiasis in several centers in Africa showed rapid improvement with disappearance of trypanosomes from the blood and glands. To date these aromatic diamidines had been administered intravenously in a dosage of from 0.5 to 1 mg. per kilogram of body weight and from 1 to 2 mg. by the intramuscular route. No serious accidents had been reported, but it was too early to say whether these brilliant researches had produced remedies of practical value in the treatment of man infected with Trypanosoma or Leishmania.

### Annual Report of Radium Commission

The Radium Commission declares in its annual report that two conditions prevent the treatment of cancer from exercising its full effect: the large majority of patients receive treatment at too late a stage and a considerable proportion do not receive the treatment best suited to them. The commission therefore welcomes the cancer act of 1939, which increases the facilities for radium treatment. In earlier reports the commission emphasized the need for limiting the more specialized forms of treatment to a few hospitals. It is difficult to get radiotherapy of a consistently high standard outside large centers, well equipped and well staffed. Smaller hospitals can undertake it satisfactorily only by combining to make large units or by close association with a large center. Whatever the size of the center there is danger that patients may not get the best treatment unless there is active cooperation between the various departments concerned. To this end arrangements should be made for all cancer patients to be seen in consultation by a radiotherapist and a surgeon or specialist surgeon, and it is a great advantage if a pathologist can also take part in the consultation. The same three consultants should be available for the follow-up clinic.

#### DECREASE IN THE USE OF RADON

There has been a considerable decrease in the use of radon. The circumstances under which radon is used are frequently unsatisfactory and it should be used only in approved centers. The commission fears that radon is frequently used by those ill fitted to do so.

#### THE STORAGE OF RADIUM IN WAR TIME

During the year a conference, attended by the British X-Ray and Radium Protective Committee, King Edward's Hospital Fund for London, the Ministry of Health, the National Radium Commission and the Research Department, was held to consider what steps should be taken to prevent the dangers of dispersal of radium by high explosive bombs. The conference recommended that on the outbreak of war all the radium in the country should be placed at the bottom of 50 foot shafts and there remain until such time as it had been ascertained under what conditions radium therapy could be safely carried on during the war. Four bore holes have been provided in the London area, and the commission is now endeavoring to arrange for about twenty additional bore holes to be provided throughout the country. All holders of radium have been invited to communicate with the commission, and those who have accepted have been informed where the nearest safe deposit is situated.

### Fatal Administration of Carbon Dioxide Instead of Nitrous Oxide

Two deaths in the Royal Naval Hospital, Haslar, were due to an unusual accident. A sick bay attendant and an able seaman who were undergoing operations died on the table. It was subsequently discovered that some one, whose identity was never discovered, had placed a cylinder of carbon dioxide in place in the machine which should have been occupied by the cylinder of nitrous oxide. At the inquest one of the anesthetists said that in civilian hospitals carbon dioxide cylinders were painted green. Since last June he had ordered the cylinders in the Haslar Hospital to be so painted. The cylinder which caused the deaths had once been green but had been painted over and there was nothing to indicate that it contained carbon dioxide. No such accident had previously occurred in the hospital, though the machine was in almost daily use. The machine was examined before administering the gas to the two men and was found to be in proper order. After the second death it was examined again and the cylinder valve was found to be marked "C. O." The cylinders were filled at the Portsmouth dockyard, and were kept separate from each other and in their proper colors at the hospital. The *British Medical Journal* suggests that the cylinders should be distinguished by some more permanent mark than paint, such as a device cast in the metal.

### Health Officers Work in Wartime

At a luncheon of the Society of Medical Officers of Health, Mr. Elliot, the minister of health, said that new and tremendous tasks daily confronted all doctors and none more than

health officers. Even in this titanic struggle they would be able to hold the health ground gained since the last war and go forward to its completion. Their new responsibilities were tremendous. They had the supervision of more than 3,000 first aid posts with a personnel of 120,000, mostly unpaid. The ambulance service had 19,000 vehicles and 82,000 personnel. There were 133,000 beds ready for military or civilian casualties. New hospital building was going ahead faster than ever before. No fewer than 40,000 beds were being added to our hospital resources. These were nearly all constructed, or being constructed, and a further program was actively under way.

## BUCHAREST

*(From Our Regular Correspondent)*

April 2, 1940.

### Campaign Against the Rise in Price of Drugs

The great rise in the prices of drugs, and even the disappearance of such staple drugs as iodine and quinine, is not justified, and so the ministry of public health intervened and instructed the National Trade Union of Pharmacists to fix uniform prices. The price of potassium iodide, which was 500 lei ($2.50) a kilogram prior to the war, now is 2,750 lei ($13.35). The price of petrolatum and liquid petrolatum has increased 100 per cent, of quinine 150 per cent and of cod liver oil 300 per cent. Since the control has been taken over by the ministry of public health, the purchase price has been established by the control office, which gets the data from the custom house and from the national bank, which provides the importers with foreign currency. The retail chemist is allowed to add 30 per cent to cover profit, rent, taxes and personnel. The allowed addition to the cost of dressing materials and bandages is only 20 per cent. Dispensing chemists must place the calculation of the price on the margin of the prescription so that the purchaser clearly sees how much is reckoned for the bottle, for the drug and for dispensing. Trespassers are punished severely.

### The Title of "Specialist"

M. Marinescu, minister of public health and public welfare, has elaborated a change in the public health law, a paragraph of which refers to the use of the title "specialist." Special practice can be pursued only by physicians who can documentarily prove that they obtained their special training in special clinics, in special state institutes or in state laboratories. Three years' special practice is prescribed by the law for operative surgeons, two years for gynecologists, obstetricians, ophthalmologists, otorhinolaryngologists, neurologists, venereologists, dermatologists, internists and radiologists. One year of special training is required for forensic doctors and balneologists. Before acquiring the "specialist" title the candidate has to pass an examination, after having spent the prescribed training years, before special boards. Exempt from these examinations are the senior physicians of state institutes and the assistants and adjuncts of university clinics.

### The Regulation of Cosmeticians

A law has been announced in the official gazette which regulates the practice of cosmeticians. The title "cosmetician" is conferred only by the ministry of public health after a special examination which consists of (1) a written thesis on the difference between cosmetic disorders of the skin and pathologic blemishes, (2) a verbal examination on the anatomy and physiology of the skin, (3) general hygiene, disinfection, infectious diseases, the hygiene of the skin and nails, personal hygiene and the hygiene of workshops, and (4) a practical examination in chemistry relative to cosmetic ointments, lotions, the recognition of apparatus used in cosmetics (ultraviolet lamps, diathermy, galvanization) and facial massage. Examinations are held annually. The examination fee is 2,000 lei ($10).

The candidates must answer questions about cleanliness of the hair and nails, prevention of contagious hair diseases, water and soap, the importance of cold and warm water, baths and the use of medicated soaps, the composition, advantages, disadvantages and preparation of face powders, the action of creams on the skin, together with their advantages and disadvantages, facial massage and accidents likely to occur in cosmetic practice. In order to teach all this the ministry of health ordered all faculties of medicine in Rumanian universities to arrange six months' courses besides work in the dermatologic clinics and wards.

## BUENOS AIRES

*(From Our Regular Correspondent)*

March 29, 1940.

### Infant Mortality in Buenos Aires

The federal public health service recently published two reports on mortality statistics, with numerous tables and curves, prepared by Dr. Adela Zauchinger, covering the years 1911-1936. According to the first of these reports, infant mortality was always lower in the capital than in the provinces. This is in accord with the experiences of other countries and is due to the fact that social measures originate in large cities. Infant mortality curves largely parallel those of the general population but gradually decrease. On the other hand, the birth rate curves show an abrupt fall, seriously endangering the surplus of births over deaths. In 1911 Buenos Aires had a population of 1,360,000 and recorded 47,820 births; in 1936 it had 2,400,000 and recorded only 38,890 births. The birth rate per thousand stood at 35.1 in 1911 and fell to 16.6 in 1936, whereas infant mortality up to 1 year fell from 104.8 per thousand in 1911 to 56.3 in 1936. The mortality for children between 0 and 15 years is now lower than the infant mortality (0 to 1 year) for 1911. Only the mortality rate for the first seven days of infant life did not decrease, but it is one and one half times higher than, for example, in 1918. Congenital injuries, such as defective vitality, premature birth, malformations and athrepsia, seem to have much to do with the situation, increasing from 7.3 per thousand in 1927 to 10.7 per thousand in 1935. Deaths from these causes predominate even at the age level of from 7 to 30 days. Other causes of death progressively come into the picture, especially intestinal diseases, which, together with those of respiration, predominate up to 1 year, varying in their predominance as the years pass. Deaths from respiratory disorders increase whenever certain infectious diseases, such as measles, whooping cough and influenza, are in the ascendancy. Statistical accuracy may be blurred, however, by the fact that deaths may be attributed to pneumonia rather than to their real cause. Infant welfare work, policlinics and other health centers have contributed a great deal to the improved conditions. For example, gastrointestinal diseases formerly accounted for more than 40 per cent of deaths during the first year of life (in 1911, 41.3 per cent) and for 22 per cent during the second year. In 1936 the computations showed a fall to 25 per cent for the first year of life and to 19 per cent for the second year of life.

The four most fatal infectious diseases were measles, scarlet fever, whooping cough and diphtheria, which pass through a four year cycle of intensity, the greatest fluctuations existing in severe whooping cough, which naturally affects the index of computations. Whooping cough in the epidemic form is not so serious in the capital as in the provinces. A recent epidemic in the region of the Cordilleras was so formidable that deaths exceeded births. After the second year, as is well known, deaths from infectious diseases increase with tuberculosis as an additional disease factor, especially from the tenth to the fifteenth

year, in its meningeal and pulmonary forms, five times more girls dying than boys. Deaths from external causes during the first two years are principally due to burns. In the fifth to the tenth year traffic accidents kill more boys than girls. In fact, deaths due to accidents occupy the third place, coming after deaths due to infectious and respiratory diseases.

The second report deals with the general mortality statistics for the population of the capital in 1937. In this investigation the laborious task was undertaken of eliminating those who had died in Buenos Aires but were not domiciled there and therefore did not belong to the city's population. This reduced the deaths from 27,381 to 24,492, 10.1 per thousand. (The birth rate for 1937, computed in the same way, was 14.2 per thousand.) Male mortality was higher than female, as reflected in 11.5 per thousand against 8.7 per thousand. The ratio remains the same, if natives and foreigners are counted separately:

| | Men | Women | Total of Men and Women |
|---|---|---|---|
| Argentineans (per thousand)..... | 8.4 | 6.4 | 7.4 |
| Foreigners (per thousand)..... | 15.8 | 13.3 | 14.7 |

However, the difference in age level must be taken into consideration. Argentinean children under the age of 15 years numbered 526,000, children of foreigners about 32,000. If mortality is computed from the 25th year upward, the difference between the two groups is greatly reduced. If individual ages are considered, total results are partly modified.

Female mortality of the Argentineans up to 14 years is lower than male mortality, likewise between the 16th and 18th year. In the 15th year it is higher, also in the 19th to 25th year. From the 26th year the death rate of men exceeds that of women by one half and one third; after the 85th year, female mortality rate is higher. The greater mortality of men accounts for the preponderance of women in the whole population. The mortality rate of foreigners after the 25th year is lower than that of Argentineans. More Argentine men die from infections and parasitic diseases, exclusive of scarlet fever, whooping cough, influenza and septicemia. The latter are the preponderating causes of female deaths together with rheumatism, diabetes, hepatitis, peritonitis and old age diseases. More men than women die from violent causes of all kinds with the exception of burns. Poison is the chief instrument of suicide, fire arms the second.

### Control of Poisoning in Buenos Aires

For some time a movement has been under way to reduce, in a systematic way, deaths from poisoning, both suicidal and accidental. The idea originated with Dr. Atilio R. Maggiolo, of the Hospital Teodoro Alvarez, who tabulated the poisons commonly used and constructed a cabinet containing the necessary antidotes and apparatus. The whole plan has now been adopted by the Asistencia Pública on the initiative of Dr. José W. Tobias, its director, and introduced into all hospitals served by this agency. A chart designating the poisons and their antidotes is part of the chest and enables prompt identification of the poison and its medication. The plan has been placed at the disposal, without charge, of the remaining Argentine provinces and territories, of practicing physicians and of foreign countries requesting the information.

### Compulsory Inoculation of Children

According to a new regulation, all obstetric divisions in the hospitals of Buenos Aires must henceforth instil a solution of from 1 to 2 per cent of silver nitrate into the eyes of the newborn (Credé's method) unless there is medical contraindication. Likewise, all children between the age of 1 and 10 years treated in the hospitals of the city must undergo antidiphtheria inoculation, unless the procedure is contraindicated. There is no charge for the vaccination.

### Hospital for Prisoners

In Buenos Aires a new hospital has been erected for the hospitalization and centralized treatment of inmates of the various penal institutes, heretofore treated in hospitals and clinics. However, inmates with infectious diseases are not accepted for treatment. The new hospital contains two divisions, a division for men with seventy-two beds and six wards and a division for women with two wards.

### Insulin and Shock Therapy in Schizophrenia

The society for neurology and psychiatry, a division of the Asociación Médica Argentina, recently devoted a special session to insulin and shock therapies in schizophrenia. Clinical and especially statistical information was supplied by the large psychiatric clinics of Buenos Aires. Prof. Gonzalo Bosch, Professor Montanaro, Dr. Pichón Riviere and Dr. Peluffo discussed shock therapy by means of electricity or by ammonium chloride. Drs. Martínez Dalke and Pedace discussed pulmonary complications in shock therapy.

### Pan-American Congress on Tuberculosis

The fifth Pan-American Congress on tuberculosis will be held October 13-17 in Buenos Aires and Córdoba. Papers to be presented may be submitted until July 1 and titles of contributions to these subjects until September 1. The official subjects announced are Index of Tuberculization in South American Countries and Heredity and Infection in Tuberculosis. The committee has offered some suggestions on the first subject to permit the preparation of uniform questionnaires in all South American countries regarding the index of tuberculization.

### Personals

Mariano Alurralde, professor of neurology in Buenos Aires, has retired on reaching the retiring age.

The opening lecture in the postgraduate course on psychoanalysis, recently organized by the society for psychoanalysis, was given by Prof. Juan Ramón Beltrán in January. Attendance on the part of physicians exceeded all expectations.

Dr. Alberto Baraldi, professor of the faculty of medicine of Rosario, the second largest city of Argentina, numbering more than 500,000 inhabitants, was appointed manager of that city.

## Marriages

MORGAN BURGESS RAIFORD, Franklin, Va., to Miss Beulah Mason Daves of Goochland County, March 16.

BERTRUM I. FIRESTONE, Columbus, Ohio, to Miss Frances Allene Rosenblum of Youngstown, March 24.

JACK JOSEPH ALION to Miss Evelyn Edythe Baker, both of Columbia, S. C., in Greenville, April 13.

WILLIAM FRANCIS MURPHY, Scituate, Mass., to Miss Mary Holmes Pulley in Boston, March 30.

ARTHUR J. FREEDMAN, Baltimore, to Miss Rose Loveman Mills of Nashville, Tenn., April 22.

WILLIAM PARKER TERRY, Victor, Va., to Miss Florence Mahone of Richmond, February 24.

CHARLES PELTZ, Brooklyn, to Miss Selma Kroudvird of New Bedford, Mass., January 28.

JAMES COLEGATE RUDD to Miss Flora Mae Johnson, both of Greensboro, N. C., in April.

SECONDO RAYMOND CAFARO to Miss Eloise Fisher, both of Youngstown, Ohio, March 23.

ROBERT M. GOLDSTEIN, Chicago, to Miss Eileen Mandl of Tuckahoe, N. Y., March 27.

# Deaths

**Austen Fox Riggs** ● Stockbridge, Mass.; Columbia University College of Physicians and Surgeons, New York, 1902; clinical professor of neurology at his alma mater and assistant instructor of pathology from 1904 to 1907; fellow of the American College of Physicians; member of the American Psychiatric Association, member and director of the Massachusetts Society for Mental Hygiene, member of the board of directors of the National Committee for Mental Hygiene from 1923 to 1936; secretary of the Thomas W. Salmon Memorial, Inc., from 1929 to 1936; member of the medical committee of the Judge Baker Foundation, Boston, from 1930 to 1936; member of the Council of the American Foundation for Mental Hygiene from 1930 to 1936; member of the Committee on Organization of the International Committee for Mental Hygiene in 1931 and member of the Council from 1932 to 1936; served during the World War; in 1921 was decorated with the Serbian Order of Cross of Mercy; formerly bank president; founder, president and medical director of the Austen Riggs Foundation since 1919; consulting psychiatrist to the Sharon (Conn.) Hospital, House of Mercy Hospital, Pittsfield, Mass., Vassar College, Poughkeepsie, N. Y., Indian Mountain School, Lakeville, Conn., and Williams College, Williamstown, Mass; member of the board of directors of Blythewood, Greenwich, Conn., from 1934 to 1936; author of "Intelligent Living" published in 1929; aged 63; died, March 5.

**William Gibson Spiller** ● Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1892; assistant clinical professor of nervous diseases and assistant professor of neuropathology at his alma mater from 1901 to 1903, professor of neuropathology and associate professor of neurology from 1903 to 1915, professor from 1915 to 1932 and since 1932 emeritus professor of neurology; emeritus professor of neurology at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; clinical professor of neurology at the Woman's Medical College of Pennsylvania from 1902 to 1925; member and past president of the American Neurological Association and the Philadelphia Neurological Society; member of the American Association of Neuropathologists; corresponding member of the Gesellschaft deutscher Nervenärzte, Société de Neurologie de Paris, Verein für Psychiatrie und Neurologie, Vienna, and honorary member of the Société Estonienne de Neurologie; honorary consultant in neurology, Philadelphia General Hospital; in 1934 received the honorary degree of doctor of science from the University of Pennsylvania and doctor of laws from Lafayette College; aged 76; died, March 18.

**Thomas Drysdale Buchanan** ● New York; New York Homeopathic Medical College and Hospital, New York, 1897; president of the American Board of Anesthesiology, Inc.; past president of the American Anesthesia Society; fellow of the American Society of Anesthetists; clinical professor of anesthesiology at his alma mater, now called New York Medical College, Flower and Fifth Avenue Hospitals, professor of anesthesia from 1903 to 1914 and attending anesthetist and lecturer of anesthesia from 1900 to 1903; professor of clinical surgery (anesthesiology), New York Post-Graduate Medical School, Columbia University; during the World War was commissioned a captain in the medical réserve corps; associate attending anesthetist to the Flower and Fifth Avenue Hospitals; attending anesthetist to the Presbyterian Hospital and New York Post-Graduate Hospital; consulting anesthetist to the Fitkin Memorial Hospital, Neptune, N. J., Metropolitan Hospital, the Reconstruction Hospital and Department of Correction; aged 64; died, March 21, of coronary occlusion.

**William Oscar Sweek** ● Phoenix, Ariz.; St. Louis University School of Medicine, 1912; member of the House of Delegates of the American Medical Association in 1918 and at a special session in 1935; fellow of the American College of Surgeons; formerly secretary of the board of medical examiners; associate professor of pathology and bacteriology at Loyola University School of Medicine, Chicago, 1913-1914; served during the World War; member of the board of regents of the University of Arizona from 1932 to 1937; chief of the surgical section, Lois Grunow Memorial Clinic; on the staff of St. Joseph's Hospital; aged 54; died, March 3, of cerebral hemorrhage.

**George Charles McElfatrick** ● Wilmington, Del.; Baltimore Medical College, 1910; past president of the Medical Society of Delaware; member of the Radiological Society of North America and the American College of Radiology; on the staffs of the Delaware State Hospital, Farnhurst, and the Delaware Hospital; aged 59; died, March 20, of acute coronary thrombosis.

**Walter H. MacCraken,** Detroit; University of Louisville (Ky.) Medical Department, 1903; member of the Michigan State Medical Society; emeritus dean and professor of pharmacology and therapeutics at the Wayne University College of Medicine; fellow of the American College of Physicians; aged 69; died, March 3, of cerebral hemorrhage and arteriosclerosis.

**Mary King Robbie,** San Antonio, Texas; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1904; for many years member of the school board; formerly instructor of hygiene at Our Lady of the Lake College; on the courtesy staff of the Santa Rosa Hospital; aged 60; died, March 6, of heart disease and hypertension.

**Reason T. Layman** ● Elizabethtown, Ky.; University of Louisville (Ky.) Medical Department, 1910; past president and secretary of the Hardin County Medical Society; chairman of the board of trustees of the city schools; aged 66; died, March 27, in St. Anthony's Hospital, Louisville, following an operation for abscess of the gallbladder.

**Heine Marks,** St. Louis; Cincinnati College of Medicine and Surgery, 1878; member of the Missouri State Medical Association; formerly member of the city council and of the state legislature; at one time superintendent of the City Hospital; aged 80; died, March 15, of influenza and chronic myocarditis.

**John Edward McArdle** ● Fort Wayne, Ind.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1907; medical examiner for the city parochial schools; formerly county coroner; past president of the staff of St. Joseph's Hospital; aged 55; died, March 17, of cerebral hemorrhage.

**Charles Edmund Laughlin** ● Evansville, Ind.; Miami Medical College, Cincinnati, 1878; an Affiliate Fellow of the American Medical Association; member of the American Psychiatric Association; for many years superintendent of the Evansville State Hospital; aged 84; died, March 30, of diabetes mellitus.

**John Davis Watterson,** Kalida, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; member of the Ohio State Medical Association; served during the World War; aged 77; died, March 26, in the Memorial Hospital, Lima, of angina pectoris and bronchopneumonia.

**Andrew Sutton Newell** ● Converse, Ind.; University of Louisville (Ky.) Medical Department, 1911; served during the World War; for many years county coroner; at one time secretary-treasurer of the school board; aged 60; died, March 15, in the Marion (Ind.) General Hospital of heart disease.

**David Lee Hirschler** ● Norfolk, Va.; University of Virginia Department of Medicine, Charlottesville, 1901; member of the American Urological Association; past president of the Norfolk County Medical Society; on the staff of the Norfolk General Hospital; aged 59; died, March 22, of coronary occlusion.

**Joseph Edwin McDonald,** Kerrville, Texas; University of Texas School of Medicine, Galveston, 1917; member of the State Medical Association of Texas; health officer; served during the World War; aged 46; died, March 8, in the Santa Rosa Hospital, San Antonio, of coronary thrombosis.

**Fred Aswell Turner,** Waco, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1924; member of the State Medical Association of Texas; on the staffs of the Providence and the Hillcrest Memorial hospitals; aged 41; died, March 29, of acute nephritis and peritonitis.

**Victor Alfred Neujean,** New York; Université de Liége Faculté de Médecine, Belgium, 1902; acting assistant surgeon, U. S. Public Health Service; on the staff of the U. S. Marine Hospital as specialist in pathology and bacteriology; aged 61; died, March 21, of pulmonary tuberculosis.

**George Hanlon Day,** Sarasota, Fla.; Kentucky University Medical Department, Louisville, 1902; member of the Florida Medical Association and the American Urological Association; veteran of the Spanish-American and World wars; aged 61; died, March 26, of cerebral hemorrhage.

**John R. Gray,** Orlando, Fla.; University of Buffalo School of Medicine, 1889; member of the Medical Society of the State of New York; at one time professor of pharmacognosy and secretary to the faculty, department of pharmacy, University of Buffalo; aged 80; died, March 28.

**Edward Ames** ● Kalamazoo, Mich.; Yale University School of Medicine, New Haven, 1874; University of the City of New York Medical Department, 1881; member of the Michigan State Medical Society; aged 89; died, March 22, in Coconut Grove, Fla., of coronary embolism.

**Adolph Bernard Oyen** ● Chicago; Detroit College of Medicine, 1890; an Affiliate Fellow of the American Medical Association; on the staffs of the Lutheran Deaconess Hospital and the Norwegian American Hospital; aged 82; died, March 24, of cerebral hemorrhage.

**Dunham O. Munson,** Pittsburg, Kan.; Marion-Sims College of Medicine, St. Louis, 1896; past president and secretary of the Crawford County Medical Society; formerly on the staff of the Mount Carmel Hospital; aged 80; died, March 31, of acute cardiac dilatation.

**Bailey Brown Sory,** Cedar Hill, Tenn.; Vanderbilt University School of Medicine, Nashville, 1893; member of the Tennessee State Medical Association; president of the Robertson County Medical Society; aged 68; was found dead, March 7, of coronary occlusion.

**W. Bert Siders** ● Warsaw, Ind.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; past president of the Kosciusko County Medical Society; aged 64; died, March 16, of carcinoma of the sigmoid and diabetes mellitus.

**Robert Spicer McDavid,** Memphis, Tenn.; Loyola University School of Medicine, Chicago, 1918; member of the Tennessee State Medical Association; on the staff of St. Joseph's Hospital; aged 47; died, March 25, of malignant hypertension.

**James Grant Shirer,** Newark, Ohio; Starling Medical College, Columbus, 1896; member of the Ohio State Medical Association; aged 67; died, March 30, of injuries received when he was struck by an automobile as he was crossing the street.

**Frank Anderson Votey** ● Grand Rapids, Mich.; College of Physicians and Surgeons Medical Department of Columbia College, New York, 1887; aged 77; died, March 24, in the Butterworth Hospital of cerebral embolism.

**Madison Jasper Pruet,** Childersburg, Ala.; Memphis (Tenn.) Hospital Medical College, 1896; member of the Medical Association of the State of Alabama; aged 71; died, March 25, in a hospital at Birmingham of pneumonia.

**Thomas Emmet Shea,** Philadelphia; Jefferson Medical College of Philadelphia, 1905; demonstrator of neuro-anatomy at his alma mater; formerly member of the state legislature; aged 61; died, January 30, of coronary occlusion.

**George Ludwig Alt** ● Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; served during the World War; aged 58; died, March 25, of coronary thrombosis.

**Dwight W. Dickinson,** Glendale, Calif.; State University of Iowa College of Homeopathic Medicine, Iowa City, 1884; aged 80; died, January 29, in Los Angeles of coronary thrombosis and arteriosclerosis.

**Arthur Francis Hoag** ● Millerton, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1879; health officer; aged 83; died, February 18, of arteriosclerosis.

**William Francis Dixon,** Carbondale, Pa.; College of Physicians and Surgeons, Baltimore, 1902; on the staff of St. Joseph's Hospital; aged 63; died, February 11, of bleeding duodenal ulcer.

**Hawkins H. Hampton,** Colbert, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1892; for many years member of the board of education; aged 72; died, March 20, of heart disease.

**Frank Walter Dannecker** ● Van Wert, Ohio; Eclectic Medical College, Cincinnati, 1920; formerly city health officer; aged 46; died, March 20, in a hospital at Louisville, Ky., of heart disease.

**Oliver Kennett McAdams,** Lexington, Ky.; University of Michigan Medical School, Ann Arbor, 1923; served during the World War; aged 43; died, February 10, of coronary occlusion.

**Otto James Owens,** Youngstown, Ohio; Starling Medical College, Columbus, 1900; veteran of the Spanish-American and World wars; aged 64; died, March 14, in St. Elizabeth's Hospital.

**Sidney Edward Pincus,** Memphis Tenn.; Memphis (Tenn.) Hospital Medical College, 1896; member of the Tennessee State Medical Association; aged 69; died, March 27, of myocarditis.

**Rush Robinson** ● Columbus, Ohio; Ohio Medical University, Columbus, 1905; for many years on the staff of the White Cross Hospital; aged 62; died, March 17, of myocarditis.

**Alexander Valentine Hunter,** Crystal Springs, Miss.; Vanderbilt University School of Medicine, Nashville, 1892; aged 72; died, March 24, of carcinoma of the pancreas.

**George Trotter Tyler,** New York; Medico-Chirurgical College of Philadelphia, 1901; veteran of the Spanish American War; aged 66; died, March 15, in Paris, France.

**Oliver C. Teagle,** Campti, La.; Memphis (Tenn.) Hospital Medical College, 1902; member of the Louisiana State Medical Society; aged 71; died, March 9, of pneumonia.

**William L. Harper,** Junction City, Ark.; Louisville (Ky.) Medical College, 1894; member of the Arkansas Medical Society; aged 65; died, March 22, of carcinoma.

**Solomon S. Lee,** Lowell, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1898; aged 68; died, March 21, of carcinoma of the ileum.

**Franklin Fisher,** Corner Brook, Newfoundland; McGill University Faculty of Medicine, Montreal, Que., 1904; aged 64; died, February 3, at Clearwater, Fla.

**George Henry Palmer,** San Francisco; Homeopathic Medical College of the State of New York, 1865; aged 95; died, February 2, of hypertensive heart disease.

**Luther H. Montgomery,** Trenton, Tenn.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1906; aged 62; died, March 16, of coronary occlusion.

**Vance M. Powell,** Peoria, Ill.; Louisville (Ky.) Medical College, 1894; aged 73; died, March 28, in St. Francis Hospital of carcinoma of the ileum.

**Charles Edwin Waters,** Murrayville, Ill.; St. Louis College of Physicians and Surgeons, 1908; aged 67; died, March 23, when he was struck by a train.

**Julia Frances Trout,** Lancaster, Ohio; Woman's Medical College of Pennsylvania, Philadelphia, 1893; aged 83; died, March 25, of arteriosclerosis.

**Thomas Achilles Dicks** ● Broadlands, Ill.; University Medical College of Kansas City, Mo., 1892; aged 73; died, March 28, of heart disease.

**George P. Thomas,** Philadelphia; Jefferson Medical College of Philadelphia, 1888; aged 77; died, January 7, of arteriosclerosis and myocarditis.

**David George Azadian,** Los Angeles; Tufts College Medical School, Boston, 1909; aged 54; died, February 8, of coronary arteriosclerosis.

**Arthur Elmer Tuck,** Philadelphia; Boston University School of Medicine, 1878; aged 86; died, February 12, of chronic myocarditis.

**Homer Graham Duncan,** Braddock, Pa.; Jefferson Medical College of Philadelphia, 1895; aged 68; died, February 10, of chronic myocarditis.

**Edwin Webster Thornton,** Piggott, Ark.; Kentucky School of Medicine, Louisville, 1893; aged 79; died, March 1, of arteriosclerosis.

**Daniel Roberts Brower,** Mercedes, Texas; Rush Medical College, Chicago, 1902; aged 65; died, March 12, of cerebral arteriosclerosis.

**Edward Arthur Murdock,** Spencer, Mass.; Boston University School of Medicine, 1878; aged 85; died, February 8, of arteriosclerosis.

**Robert H. Strickland,** Clifton, Tenn.; Memphis Hospital Medical College, 1891; aged 81; died, February 4, of cardiorenal disease.

**Alvan L. Waltz,** Cleveland; Homeopathic Hospital College, Cleveland, 1883; aged 81; died, March 22, of nasal hemorrhage.

**Pinta Prichard,** Shawmut, Ala.; Kentucky School of Medicine, Louisville, 1893; aged 77; died, March 1, of carcinoma of the lung.

**William S. Fall,** Henderson, Texas; Louisville (Ky.) Medical College, 1880; aged 90; died, March 18, of arteriosclerosis.

**J. D. Terry,** Burkeville, Va.; Medical College of Virginia, Richmond, 1905; aged 66; died, February 17, of pneumonia.

**George Conkle Shannon** ● Baltimore; Baltimore Medical College, 1883; aged 75; died, February 13, of pneumonia.

**Dan MacDougall,** Winnipeg, Man., Canada; Manitoba Medical College, Winnipeg, 1917; died, Dec. 22, 1939.

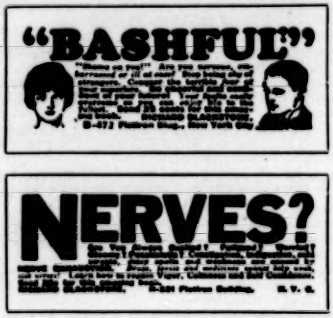
**James Kelley Brammer,** Cincinnati (licensed in Ohio in 1896); aged 88; died, March 2, of myocarditis.

## Bureau of Investigation

### A. G. GOODMAN'S MAIL ORDER FRAUDS

#### Kelp-Tone, Robert Holmes and Richard Blackstone Fakes Are Debarred from the Mails

Albert G. Goodman of Jersey City, N. J., and New York has been a medical mail order quack for some years. As long ago as 1927 he was advertising under the name "Richard Blackstone," as will be detailed later in this article. He was quacking it under the trade style "American Laboratories" in 1929 and has conducted other medical mail order frauds under such




Two typical "Blackstone" advertisements.

names as "Robert Holmes," "Kelp-Tone Company," "Everett H. Singer," "S. J. Scheen" and possibly others.

The Post Office Department through its fraud order division proceeded against Goodman in 1931 when he was doing business under the names of Blackstone, American Laboratories, Singer, Scheen, and so on. At that time Goodman, to forestall the issuance of a fraud order, made an affidavit that he would go out of the business he was then engaged in and never resume it. His oath proved to be as worthless as his business was fraudulent. At that time he was selling a nostrum called "Nervor" for "Nervous Exhaustion." In 1936-1937 the Federal Trade Commission ordered Goodman—as Robert Holmes—to cease doing the fraudulent business that he had sworn to abandon—but of course he didn't. He apparently took the attitude—not unnaturally—that, so long as there was no danger of being fined or imprisoned, why pay any attention to federal authorities?

Finally in 1939 the Post Office Department again interested itself in Goodman's fraudulent mail order activities, which at that time comprised the Kelp-Tone swindle, and in June 1939 a fraud order was issued against the names Kelp-Tone Company, A. G. Goodman, Robert Holmes and Richard Blackstone.

According to Goodman his "patent medicine" Kelp-Tone would completely and permanently overcome any case of:

| | | |
|---|---|---|
| Constipation | Malnutrition | Neurasthenia |
| Common Cold | Sciatica | Underweight |
| Anemia | Goiter | "Lowered Vitality" |
| Dyspepsia | Headache | "Nervous Disorder" |
| Weakness | Asthma | Arthritis |
| Rickets | Fatigue | Gout |

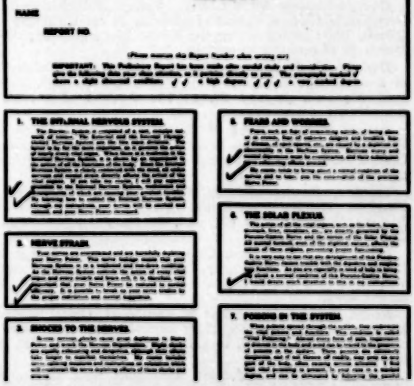
—and a number of other conditions. For example, it would also cure "disturbance of the reproductory organs"; also it was a sovereign remedy for "female disorders," "bladder affections," "kidney disorders," subnormal growth, high blood pressure, bone diseases, tooth decay and "nail brittleness." In fact, one might assume from reading Goodman's advertising that the only things Kelp-Tone was not specific for were soft corns and hardening of the arteries.

Kelp-Tone was claimed to be dried and powdered kelp (seaweed) compressed into tablets. Analysis showed them to contain about 1/100 grain of iodine and small amounts of sulfur, phosphorus, sodium, potassium, chloride, iron, calcium, magnesium and other elements. The Kelp-Tone Company was conducted from 840 Broadway, New York. From the Flatiron Building, 175 Fifth Avenue, New York, Goodman had carried on his "Richard Blackstone" fraud, of which more later. From 246 Fifth Avenue he operated "The American Laboratories" and from the Fuller Building, Jersey City, N. J., he ran his "Robert Holmes" quackery. Goodman was a peripatetic and versatile faker.

In 1927, when the Richard Blackstone fake was in full swing, the then Director of the Bureau of Investigation of the American Medical Association, in order to obtain the "literature" and follow-up system of Goodman's fraud, sent 25 cents to the Blackstone concern for its booklet "New Nerves for Old." This proved to be, in effect, a "come-on" for a more elaborate swindle that sold for considerably more money. With the booklet came the first of many follow-up letters all urging the prospective victim to fill out a questionnaire and return it to "Blackstone"—who styled himself a "Nerve Specialist and Hygienist"—and a "Special Diagnosis" would be sent "absolutely free." Blackstone also claimed to be associated with a laboratory that had "a large number of skilled experts and chemists to make analyses and diagnoses."

In due time the follow-ups ceased but the name of the inquirer was evidently filed on Goodman's sucker list, for about two years later a mimeographed letter came, not from "Richard Blackstone," but from the "Nerve Culture Institute," also in the Flatiron Building, notifying the recipient that the "Institute" had ready for distribution its "new book entitled 'New Nerves for Old.'"

While Goodman was advertising from 175 Fifth Avenue, New York, under the name of Richard Blackstone, that "I employ no drugs" and emphasizing that "Drugs Are Valueless," he was, under the trade style The American Laboratories at 246 Fifth Avenue, New York, selling a number of "patent medicines." These comprised "Nervor" for "nervous exhaustion," "Pilesal"




An individual "analysis" by "Robert Holmes."

for piles, "Eczemesal" for eczema, "Stomesal" for "stomach trouble," "Rheumesal" for rheumatism and "Pimplesal" for pimples!

The Richard Blackstone fake was actually an attempt to sell a "Course of Instruction" for which Goodman asked $10. Those who signed the "Enrollment Blank" and sent it with the necessary $10 were asked to fill in a questionnaire. This, after

calling for information as to age, weight, sex, height, etc., continued in part as follows:

> Were you a nervous child? . . . Are you nervous now? . . . Was, or is, your father high-strung and nervous? . . . Your mother? . . . Do you feel depressed? . . . Are you restless? . . . Easily angered? . . . Irritable? . . . Are you bashful? . . . Are your sex-powers weak? . . . Have you any bad sex habits? . . . Have you dizzy spells? . . . Is your hair falling out? . . . Do you fear insanity? . . .

While Goodman—as Richard Blackstone—stated that answering these and other questions would enable him to give better "personal and individual" service, he admitted to the Post Office Inspector who investigated the fraud that the questionnaires served no particular purpose, for when received by him they were merely filed! It developed also that the claim of "individual and personal" service was more fakery. The "courses" that the Richard Blackstone outfit sent out were the same whether they went to a young woman suffering from "bashfulness" or to an elderly roué who had admitted "bad sex habits."

Goodman's "Robert Holmes" swindle was carried on from the Fuller Building, Jersey City, N. J. It was essentially the same fake as the Richard Blackstone "Course of Instruction" except that instead of selling for $10 it sold for $50, later marked down to $35.

The Goodman case emphasizes again that the issuance of fraud orders by the Post Office Department is not always effective against such individuals. Presumably, only imprisonment or heavy fines could deter Goodman and his ilk from continuing to swindle the sick.

## Correspondence

### IMPORTANCE OF INTENSIVE HOME FOLLOW-UP IN TUBERCULIN TESTING SCHOOL PROGRAMS

*To the Editor:*—I am sure that it will be gratifying to Dr. Robert E. Plunkett, general superintendent of tuberculosis hospitals, New York State Department of Health (THE JOURNAL, Dec. 23, 1939, p. 2288), to know that there is one health department that is using the tuberculin test in the public schools, largely as a clue to the infection in the home. I agree that the use of tuberculin in school surveys and subsequent roentgenographing of the reactors without a survey in the homes of the Mantoux positive children is extremely wasteful. I do believe that the data given herewith show that, combined with a careful systematized follow-up system, more valuable clues are revealed which in rural districts are impossible to obtain otherwise. While the importance of industrial surveys cannot be minimized, there is some danger of health officers throughout the country misinterpreting Dr. Plunkett's remarks in relation to tuberculin testing in the schools. It must be clearly understood that in rural areas particularly there are generally no large industrial plants where the work that Dr. Plunkett has so well illustrated can be carried out.

In the Los Angeles County Health Department it became apparent that some additional specialized effort must be made to follow up the families among the Mantoux positive children, and in the fiscal year 1936-1937 a special group of six nurses was detailed on this job. The results more than justified this effort. In the three years immediately preceding 1936-1937 forty-four active cases of pulmonary reinfection type of tuberculosis had been discovered in school children alone out of 4,770 positive reactors. Beginning in 1936-1937, during which year the intensive follow-up system was started, the record shows that there were seven cases found in the schools out of 1,318 Mantoux positive reactors, but to this must be added nine additional cases found in the home follow-up, making a total of sixteen.

In 1937-1938 there were 1,429 positive Mantoux reactions with fourteen cases of active pulmonary tuberculosis found in the schools, but in the home follow-up an additional eighteen were revealed, making a total of thirty-two cases of active pulmonary tuberculosis.

In 1938-1939 there were 3,194 positive reactors discovered in the schools, among whom there were twenty-four infected with adult type tuberculosis. In the home follow-up work fifty-three additional cases were revealed, making a grand total of seventy-four new previously unknown cases of tuberculosis.

During the years 1933-1936, relying on the school tuberculin testing alone, without intensive follow-up, we discovered forty-four new cases.

During the years 1936-1939 inclusive, the school tuberculin test gave a total of forty-two new cases. The intensive home follow-up brought to light an additional eighty cases, a grand total for these three years of 122 cases, which is to be compared to the forty-four found in the years 1933-1936, or an increase of almost 300 per cent in efficiency.

The effects of this intensive follow-up work on costs may be of interest also. Dr. Plunkett stated that it cost $1,737 to discover a case in a child under 15 years of age, and I presume that this cost is based on the isolated discovery of the single child. A tabulation of the cost, combining the school and home call work, based on total cases revealed (seventy-four in 1939), gives the average cost per case of $364. These figures include every item in both school and home calls—roentgenograms and the like. I believe that this is a most reasonable unit cost in this sort of work and certainly compares most favorably with the $1,737 referred to.

Some few details regarding last year's work may be further interest. There were 12,872 children Mantoux tested in the elementary schools, with 1,607 positive reactors, of whom only 492, largely Mexican children were roentgenographed. In this group there were only six cases of active tuberculosis found, or a ratio of 1 to 268 positive Mantoux reactions. However, in the home follow-up of these elementary positives an additional twenty-nine cases of active tuberculosis was revealed, which gives a yield total of thirty-five for the elementary group.

In the high school and senior high school 7,839 children were tested: 1,512 were positive reactors, 1,504 were roentgenographed and in fifteen cases active tuberculosis were revealed, a ratio of 1 to 100 in the positive group. The follow-up in this group gives an additional twenty-four cases, which, with the fifteen cases discovered among the students, gives a total yield of thirty-nine, which is to be compared to the thirty-five cases the total yield for the elementary school group. It would therefore seem that, regardless of the fact that the total yield is higher in the junior and senior high schools of cases to be discovered among the school children, the increased yield in the home places the tuberculin testing in elementary schools on a more important level so far as discovery of cases in the home is to be considered. This tends to confirm again the statement of Dr. Plunkett that "if a child reacts to tuberculin, the younger the child, the more likely it is that the infection occurred in the home."

Some idea of the considerable amount of work involved in bringing additional persons to tuberculosis clinics for examination is revealed in the following figures:

The total number of home calls in relation to last year's positive reactors (3,194) resulted in 7,335 home visits and the taking of 5,578 Mantoux tests and 3,187 x-ray films. The ratio of positive tuberculosis found to persons roentgenographed in the home follow-ups was 1 in 60. It is interesting to note that during the past three years in the follow-up work a grand total of forty-nine patients with moderately and far advanced tuberculosis were placed under careful supervision with undoubted great benefit to the community and a total of thirty-one patients with minimal tuberculosis placed on the road to recovery.

A study of the figures reveals that the home follow-up work brings under supervision a larger number of those types of tuberculosis dangerous to the public at large as well as in the family, while in the school work for a period of six years the ratio is in the opposite direction, the number of minimal cases to far advanced being 9 to 1.

I heartily concur in the remarks of my good friend Robert E. Plunkett and desire to stress again the great need of careful follow-up work in relation to tuberculin testing in the school; I believe that such careful follow-up work pays sufficiently important dividends that in rural districts the tuberculin testing program in public schools is a weapon in modern case finding and that it should not be abandoned. Furthermore, the price per case found brings the cost to the moderate level of $364.

Credit is due Dr. P. K. Telford, the head of the Tuberculosis Division of the Los Angeles Department of Health, and the nurses who worked so hard in making the follow-up program a success.

J. L. POMEROY, M.D., Los Angeles.
Los Angeles County Health Officer.

## EMERODS

*To the Editor:*—With regard to your article on "Emerods" in the March 23 issue of THE JOURNAL, Prof. J. G. Adami, teaching pathology at McGill University Faculty of Medicine to my class of 1912, cited this disease as bubonic plague, which was epidemic in London in 1664-1665 and which was somewhat checked by the great fire the year following.

He pointed out the concurrent death of mice, rats and birds, as well as of domestic animals, and accused the fleas leaving these animals, when the latter were dying, and biting human beings about the legs—hence the buboes in the inguinal region—as carriers.

A study of the conditions in London at that time and of the conditions existing at the time of the return of the Ark of the Covenant by the Philistines to the Children of Israel (I Samuel chapter 6, verse 4) will show a close resemblance.

ERLE DRAPER, M.D., C.M., Bedford, Que., Canada.

*To the Editor:*—In THE JOURNAL, March 23, page 1106, Dr. Otto Neustatter takes issue with the view that the "emerods" referred to in I Samuel represent a syphilitic infection. It is interesting that this passage is usually cited by the historians of bubonic plague as one of the first recorded instances of that disease (Simpson, W. J.: Treatise on Plague, Cambridge, England, 1905). In support of this assumption is the more literal rendering of the Hebrew "ophlim" as "swellings." This term has been taken as implying the buboes of plague. An epidemic and highly fatal disease associated with swellings is descriptive of plague.

Furthermore, the God of Israel was to be appeased by the making of "images of your mice that mar the land" (I Samuel 6:5). A preceding or concurrent murine epizootic has been frequently noted in the epidemics of the Black Death. It would seem that not only was the pestilence not syphilis (as Dr. Neustatter has so well pointed out) but was most likely an epidemic of bubonic plague.

IRVING A. BECK, M.D., Providence, R. I.

*To the Editor:*—In THE JOURNAL, March 23, there is an article by Otto Neustatter on "Emerods."

Unless he uses some other Bible than the St. James version, the account of this is not in II Samuel but is recorded in chapters 4-5 and 6 of I Samuel.

The ark was captured and taken to a Philistine temple, and the next morning the image of Dagon is found on its face before it. This is followed by an affliction of "emerods"—acute, phlegmonous, purulent tumor masses of the genitalia, so they decide to send it back with a peace offering. This offering took the form of five rough representations of these tumors and of five golden mice. The small black rat was probably translated as mice. In some way they had associated these mice with the disease and there is here undoubtedly an allusion to the plague and its characteristic buboes of the inguinal glands.

This explanation is not original with me. I think it was suggested to me by either Blue or Rucker of the Public Health Service when I was actively assisting them in the suppression of an outbreak of the plague in San Francisco in 1908.

RAWLINS CADWALLADER, M.D., San Francisco.

# *Queries and Minor Notes*

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

## CONGENITAL DEAFNESS IN INFANTS

**To the Editor:—Will you please summarize the present status of the problem of congenital deafness with special reference to diagnosis in the infant, treatment, and problems of education. I will appreciate references.**

**Louis Lina, M.D., Trenton, N. J.**

ANSWER.—Authorities are agreed that the diagnosis of congenital deafness in infants is not easy. There are few tests that can be accurately applied in the case of a child less than 3 years of age.

A deaf child cries but is said not to cry as loudly as a normal one. Tests, such as clapping the hands, slamming doors, and the like, are not reliable, since they introduce too great an element of vibration and tactile sense.

A few observers have studied the conditioned reflex method of determining the presence and nature of hearing in infants, but this is obviously a painstaking, time-consuming and not easily available method. The most practical tests consist in eliciting the various oculopalpebral reflexes in response to loudly struck tuning forks, especially of a pitch of 4,096 double vibrations. The examiner stands behind the child so that his movements are concealed and another observer watches for blinking of the lids and dilatation of the pupils. This test is highly thought of by clinicians, for if an individual hears the C-4 fork there cannot be much impairment of the perceptive apparatus. This response is coupled with other acoustic motor reactions producing a so-called startle pattern, the whole reaction forming a reliable indicator of ability to hear.

Congenitally deaf individuals furthermore, as a rule, have normal labyrinth function, whereas the reverse is often true for persons profoundly deaf because of some inflammatory process.

In older children cooperation in testing permits the use of tuning forks, the audiometer and similar methods. It is thus possible to determine the degree of deafness and the presence or absence of remnants of hearing important in the training and education of the child. It is said that most individuals congenitally deaf are not completely so but possess tone islands and gaps.

Tuning forks and audiometers not being available for use in the very young, observation over a period plays a large part in diagnosis. It is important furthermore to rule out the possible though rare instance of primary mutism with good hearing, but much more is it necessary to rule out mental deficiencies which interfere with proper progress and simulate the delay in speaking seen in the deafened. The services of a child psychiatrist is advisable in such situations. Treatment is given through education by special methods in special schools. Lip reading is started early as is the so-called acoustic method. For the details, one should consult a good school for the deafened.

References:

Goldstein, M. A.: Problems of the Deaf, St. Louis, Laryngoscope Press, 1933.
Lederer, F. L.: Diseases of the Ear, Nose and Throat, Philadelphia, F. A. Davis Company, 1938.
Strauss, Hans; Landis, Carney, and Hunt, W. A.: Acoustic Motor Reactions, *Arch. Otolaryng.* 28:940 (Dec.) 1938.

## ESTROGENIC THERAPY AND UTERINE BLEEDING

*To the Editor:*—A patient says that three years ago both ovaries were removed. She took estrogen by hypodermic for some months. The last several months she has been taking it by mouth. She does not know the size of the dose. This is her first visit to my office. Her chief complaint is a continuous vaginal discharge, bloody as at the beginning of menstruation. It has persisted for three months, gradually showing more blood. Physical examination shows the uterus anterior, small, hard and freely movable. The tubes and ovaries are absent. The cervix is normal. Can the estrogen account for this continuous flow? Would curettage be indicated even if the estrogen could account for the symptoms, to rule out a cancer? Where conditions make removal of ovaries necessary, would it be better to remove the uterus also?

Harlan P. Kahler, M.D., Walla Walla, Wash.

ANSWER.—Administration of estrogenic substance can bring about bleeding from the uterus either while these preparations are being administered or after they are discontinued. When estrogenic therapy is carried out on women who spontaneously ceased having menstrual periods and on women who had an artificial menopause produced by radiotherapy, it is not uncommon to observe uterine bleeding. In spite of this, since the bleeding in this case has persisted for three months, a thorough curettement should be done to rule out carcinoma of the body of the uterus. If there is no cancer, the estrogen should be discontinued gradually, to avoid a possible profuse uterine hemorrhage.

There is no unity of opinion concerning the disposition of the uterus in cases in which both ovaries must be removed. Some gynecologists believe that the uterus has some hormonal action even in the absence of the ovaries and they leave the uterus in situ. However, those who are of the opinion that the uterus has no function in the absence of the ovaries remove it, particularly because a hysterectomy along with removal of both ovaries eliminates one possible source of cancer in women. Most gynecologists prefer to remove the uterus when both ovaries must be sacrificed unless a portion of an ovary can be transplanted somewhere in the body to maintain the endocrine function of the uterus.

## URTICARIA AND INTESTINAL PARASITISM

*To the Editor:*—A patient had hives for two days. One week later there occurred an acute swelling of one finger joint, which responded promptly to hot moist heat. Several days after this there appeared an acute, painful redness and swelling on the inside of the right heel, which also responded to heat. Several days later an acute swelling appeared underneath the right foot sole. This swelling also responded promptly to a hot bath. An examination disclosed two slightly infected teeth. The stool was loaded with Amoeba coli, Bacillus bütschlii and Trichomonas hominis. Could the symptoms described be caused by this intestinal infection? Could an acute arthritis subside within twelve or twenty-four hours? Would the following course of treatment be considered sufficient: carbarsone 0.25 Gm., two capsules daily for ten days, and during this time three retention carbarsone enemas, each time with 2 Gm. of carbarsone? After this, three times daily, 0.25 Gm. vioform capsules for ten days.

M.D., California.

ANSWER.—One would be reluctant to give this patient any medication other than such simple remedies as calcium gluconate or dicalcium phosphate. Patients who show an allergic imbalance frequently develop similar manifestations through the use of drugs. Therefore one would caution against the use of carbarsone and vioform either by mouth or by rectum.

## TOBACCO SMOKE FILTERS AND DENICOTINIZING

*To the Editor:*—1. Has there ever been published a comparative study of the nicotine content of the common brands of cigarets and so-called denicotinized tobacco products? 2. Is it known to what extent the nicotine content of the smoke is decreased by the denicotinizing process? 3. Is the filtering principle used in the Zeus cigaret holder and pipe more or less efficacious than the denicotinizing process in removing nicotine from tobacco smoke? 4. Is there any evidence that the use of denicotinized tobacco or a filtering device is less "harmful" than the use of tobacco not so treated?

M.D., New York.

ANSWER.—1. The nicotine content of denicotinized and other brands of tobacco products was extensively investigated by E. M. Bailey and his associates (Bull. 295, May 1928, and Bull. 307, May 1929, of the Connecticut Agricultural Experiment Station). Further studies were reported by Emil Bogen (THE JOURNAL, Oct. 12, 1929, p. 1110, and *California & West. Med.* **45**:342 [Oct.] 1936).

2. The nicotine content of so-called denicotinized tobacco is on the average from 50 to 70 per cent of that of the average commercial products not so treated but is similar to that of Oriental and West Indian tobaccos. The nicotine content of the smoke is affected by the manner of smoking and the moisture and acidity in the tobacco but is generally proportional to the nicotine content of the tobacco itself.

3. The filtering principle used in the Zeus cigaret holder and pipe is about of the same order of efficiency as the commercial processes now employed in removing nicotine from tobacco. Data on the efficiency of the principle used in the Zeus products is given by Derr, Riesmeyer and Unangst (*Indust. & Engin. Chem.* **29**:771 [July] 1937). The efficiency of such a device decreases rapidly with use, so that it is necessary to change the filter after smoking from five to ten cigarets.

4. Either the use of denicotinized products or a filtering device in the holder may diminish the nicotine content of the smoke, but usually only by a maximum of 50 per cent. If assurance on such a measure results in the smoker increasing the number of cigarets used, as often happens, he may actually absorb more nicotine as a result than if he continued his usual quota. The relative harmfulness of higher concentrations of nicotine in the smoke over shorter periods of time and lower concentrations over longer periods depends on the possible pathologic conditions in the smoker.

## HYPOTHYROIDISM OF MOTHER AND CRETINISM

*To the Editor:*—About a year ago I was called to see a 5 months old infant about a mild gastrointestinal disturbance. The first glance at this child revealed the typical facies of a cretin. The tongue protruded slightly from the constantly open mouth, which drooled profusely. The lips were thick, the nose broad, the expression stupid. The child was moderately active when disturbed enough but had the reputation of being extremely well behaved and was in general passive to external stimuli. He slept more than average and was overweight. There was no umbilical hernia. The parents had not noticed any change in his appearance, so I assumed that his facies was not a recent acquisition. The drooling was known to have been present for some time. The child began teething at the end of the fifth month, crawled and was able to sit up in the sixth month. At about the eighth month his interest in things about him approached normal and from then on his mental development has apparently been normal. After the first year the drooling had about ceased. Teething progressed normally and now at the age of 17 months he walks steadily, his tongue does not protrude, his mouth is large but closed most of the time, his expression is bright, and the anterior fontanel admits one fingertip. He has received no thyroid or other specific treatment. The father and mother are both intelligent and attractive in appearance. One child died shortly after birth because of congenital absence of part of the anterior abdominal wall. Does hypothyroidism in the mother lead to intra-uterine exhaustion of the baby's thyroid? What is the explanation of this apparently temporary lack of thyroid function in the early months of this child's life?

M.D., Maryland.

ANSWER.—The development of the child was so normal with regard to crawling, sitting up, dentition, cerebration and walking that the presence of an underfunction of the thyroid seems improbable. The spontaneous disappearance of cretinism has not been observed. There is no evidence that hypothyroidism in the mother leads to "intra-uterine exhaustion of the baby's thyroid," but cretinism appears to be more common among the offspring of hypothyroid mothers than among those of mothers with normal thyroid glands.

## EFFECT OF EPHEDRINE ON HEART

*To the Editor:*—A man aged 23 on two different occasions, about a week apart, after taking three-eighths grain (0.024 Gm.) of ephedrine in capsule form within a relatively short time became heart conscious because of frequent extrasystoles. The first spell lasted several hours. The second was apparently shorter, 3 grains (0.2 Gm.) of quinidine having been administered about half an hour after the extrasystoles began. On many occasions over a period of years the patient has taken ephedrine internally and used it intranasally without the slightest disturbance of cardiac rhythm. Have there been reports of similar cases? It is the first one I have ever encountered, although I have seen many patients who have taken ephedrine internally or used it locally for many years and in fairly large quantities without ever having any such disturbance.

M.D., California.

ANSWER.—Such effects of ephedrine occur occasionally, and the possibility of their occurrence should always be considered when it is administered. In a few cases it has caused acceleration of the heart rate. Usually, however, the heart rate is slowed and there is an increase in both systolic and diastolic blood pressure. There may be frequent extrasystoles of ventricular origin. There may be a sensation of throbbing in the head. A sense of anxiety occasionally occurs.

## PRURITUS ANI

*To the Editor:*—Could you tell me where "Benacol," as recommended by Yeomans for injection in pruritus ani, may be obtained?

Lowell C. Smith, M.D., Lafayette, Ind.

ANSWER.—Benacol Solution, according to information available, is the trade name under which the Seydel Chemical Company markets a mixture stated to contain 5 parts of the benzoic acid ester of ethyl aminobenzoate and 5 parts of benzyl alcohol, in 90 parts of oil of sweet almond.

The Seydel Chemical Company presented Benacol for consideration by the Council on Pharmacy and Chemistry early in 1930. As evidence for the value of the preparation, which is

proposed for use by subcutaneous injection in the relief of pruritus ani and other localized areas of intense itching, the firm submitted the brief report published in the *Medical Journal and Record*, Sept. 4, 1929, in which favorable results were discussed. The Council held this article to be insufficiently critical and not to constitute acceptable evidence of the usefulness of Benacol. In May 1930 the Seydel Chemical Company was informed that the preparation could not be accepted for inclusion in New and Nonofficial Remedies unless satisfactory evidence was presented regarding toxicity, antiseptic action and therapeutic efficacy. Up to the present time the Council has not received this evidence.

## ENURESIS

**To the Editor:—What hormones, if any, are generally used for enuresis?**
**J. Louis Waldour, M.D., Loveland, Colo.**

ANSWER.—There is no adequate clinical or experimental evidence that any of the hormones have an effect on enuresis. Before any treatment is instituted, a thorough urologic examination should be made, including a plain roentgenogram of the genito-urinary tract, and pyelograms, to determine whether the cause is organic or functional. Frequently enuresis has been considered to be functional, when actually there is a definite organic disturbance present.

## ENDOLIMAX NANA NONPATHOGENIC

**To the Editor:—Is there any particular treatment for intestinal infestation by Endolimax nana?** **David L. Ehrich, M.D., Westport, Conn.**

ANSWER.—Since Endolimax nana is nonpathogenic, there is no more need of treating the patient harboring it than there is for treating him for the presence of colon bacilli in the intestine. No drug so far discovered is efficient in removing this ameba from the intestine. Carbarsone, however, which is used for the treatment of Endamoeba histolytica, will sometimes remove Endolimax nana and other nonpathogenic amebas from the intestine.

## FRIGIDITY IN WOMEN

**To the Editor:—The answer to Dr. Dunn's inquiry regarding frigidity in women (The Journal, March 23, p. 1180) fails to mention a form of frigidity which may be considered constitutional and perhaps hereditary.**

**A young woman consulted me some years ago because she was engaged to be married and feared that her married life would be a failure because of her frigidity. She was having relations with her fiancé but felt no sensation whatever. What concerned her most was the fact that her two sisters and her mother were similarly constituted and her mother's married life was so miserable because of her lack of sexual feeling that she feared a similar fate was in store for this young woman, my patient. Her sisters were having trouble with their husbands similar to that of their mother. They were married to men who were unusually normal and their lack of sexual interest and their inability to feign an interest was the source of constant quarreling and bickering in their homes. This the patient feared.**

**At the examination it was found that there was no response sensation whatever at the clitoris or in the vagina either to manual manipulation or the electric current. She was absolutely anesthetic in these regions. Examination of the sisters gave the same result. On inquiry of the mother as well as the daughters separately, complete denial was made of any early instruction that might have caused disgust or fear of sex life. The fact that three young women and their mother were sexually anesthetic and unable to simulate sexual interest leads to the thought that the condition must have been a "blind spot" in the sexual sphere probably hereditary in character.** **A. L. Welbaret, M.D., New York.**

## HODGKIN'S DISEASE

**To the Editor:—In Queries and Minor Notes for March 16, 1940, there were several questions asked following a description of a case of Hodgkin's disease. The question "Are the remissions in Hodgkin's disease frequently so dramatic that the one described may have been a coincidence, unrelated to the treatment," should have been answered "yes." Remissions in Hodgkin's disease are common. The clinical course follows closely the relapses and remissions of the fever. It may be a low grade continuous fever; sometimes it may be as high as 103 but rarely over 101 F., but it is much more likely to be a remarkably remittent type. It is to this remittent type of fever that Pel and Ebstein called particular attention. Fever may occur in paroxysms over and over again, and the clinical course may go from one relapse to a remission and then to a relapse several times, sometimes lasting for years. At present there are three patients with Hodgkin's disease at the Cook County Hospital whom I have been watching with some interest. One patient, a white man aged 47, entered the hospital acutely ill. Within four days he was, from all evidence, practically moribund. Much to our surprise he made a spectacular recovery. His temperature, which was 103 F. for six days, became normal, enlargement of the glands disappeared and we could no longer feel the spleen. He was up and about and feeling well. Since then he has been through two relapses and two remissions. He is now in his fourth relapse. However, the point I have tried to bring out is that just when it appeared that he was near death he three times made a spectacular recovery. We are now awaiting to see the outcome of his fourth relapse.**
**Joseph S. Angell, Chicago.**

# *Medical Examinations and Licensure*

## COMING EXAMINATIONS

### NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL, May 4, page 1830.

### STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 18-20. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARIZONA: *Basic Science.* Tucson, June 18. Sec., Dr. Robert L. Nugent, University of Arizona, Science Hall, Tucson.

ARKANSAS: *Basic Science.* May 25. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Medical* (Regular). Little Rock, June 6-7. Sec., Dr. D. L. Owens, Harrison. *Medical* (Eclectic). Little Rock, June 6-7. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral examination* (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California). Los Angeles, July 15. *Written examination.* San Francisco, June 24-27. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

CONNECTICUT: *Basic Science.* New Haven, June 8. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

DELAWARE: *Examination.* Dover, July 9-11. *Reciprocity.* Dover, July 16. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: Washington, May 13-14. Sec., Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: *Basic Science.* De Land, May 25. Sec., Prof. John F. Conn, De Land. *Medical.* Tampa, June 17-18. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, June. Joint Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

ILLINOIS: Chicago, June 25-27. Acting Superintendent of Registration, Mr. Lucien File, Springfield.

INDIANA: Indianapolis, June 18-20. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: Iowa City, June 4-6. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

KANSAS: Kansas City, June 18-19. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. Seventh St., Kansas City.

KENTUCKY: Louisville, June 6-8. Sec., Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Augusta, July 2-3. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Medical.* Baltimore, June 18-21. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, June 18-19. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, July 9-11. Sec., Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Ann Arbor and Detroit, June 12-14. Sec., Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing.

MISSISSIPPI: Jackson, June. Asst. Sec., Dr. R. N. Whitfield, Jackson.

NEBRASKA: *Medical.* Omaha, June 12-14. *All applications must be on file 15 days prior to date of examination.* Dir., Bureau of Examining Boards, Mrs. Clark Perkins, 1009 State Capitol Bldg., Lincoln.

NEW JERSEY: Trenton, June 18-19. Sec., Dr. Earl S. Hallinger, 28 W. State St., Trenton.

NEW YORK: Albany, Buffalo, New York and Syracuse, June 24-27. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Building, Albany.

NORTH DAKOTA: Grand Forks, July 2-5. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: Columbus, June 3-6. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: Oklahoma City, June 5-6. Sec., Dr. James D. Osborn Jr., Frederick.

OREGON: *Medical.* Portland, June 18-20. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland. *Basic Science.* July 6. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PENNSYLVANIA: *Written.* Philadelphia and Pittsburgh, July 9-11. *Bedside.* Philadelphia, July 12-13. Dir., Bureau of Professional Licensing, Dr. James A. Newpher, 358 Education Bldg., Harrisburg.

PUERTO RICO: San Juan, Sept. 3. Sec., Dr. O. Costa Mandry, Box 3854, Santurce.

SOUTH CAROLINA: Columbia, June 25. Sec., Dr. A. Earle Boozer, 508 Saluda Ave., Columbia.

SOUTH DAKOTA: Rapid City, July 16-17. Dir., Medical Licensure, Dr. J. F. D. Cook, Pierre.

TENNESSEE: Knoxville, Memphis and Nashville, June 14-15. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

TEXAS: San Antonio, June 17-19. Sec., Dr. T. J. Crowe, 918-20 Mercantile Bldg., Dallas.

VERMONT: Burlington, June 11-13. Sec., Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 18-20. Sec., Dr. J. W. Preston, 30½ Franklin Rd., Roanoke.

WASHINGTON: *Basic Science.* Seattle, July 11-12. *Medical.* Seattle, July 15-17. Sec., Department of Licenses, Mr. Nelson N. Vaughen, Olympia.

WEST VIRGINIA: Huntington, July 1-3. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: *Basic Science.* Milwaukee, June 1. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Milwaukee, June 25-28. Sec., Dr. E. C. Murphy, 314 E. Grand Ave., Eau Claire.

WYOMING: June 3-4. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

# Book Notices

**Injuries of the Skull, Brain and Spinal Cord: Neuro-Psychiatric, Surgical, and Medico-Legal Aspects.** Edited by Samuel Brock. Cloth. Price, $7. Pp. 632, with 63 illustrations. Baltimore: William Wood & Company, 1940.

Here is a book of unusual excellence. "The twenty-two contributors to this work have actually written a series of comprehensive monographs on neurology, psychiatry, neurosurgery (in its civil and military aspects), radiology and forensic medicine, as far as these subjects relate to injuries of the skull, brain and spinal cord." The twenty-two chapters are uniformly well written with but one exception. The material is well organized and is clearly and concisely presented. Chapter 10, on cerebral birth injuries, is not of the standard set by the rest of the book. This chapter consists largely of generalizations many of which are neither commonly accepted nor substantiated by any factual data. On pages 216-217 the conclusions of Schreiber are criticized but evidence is not presented to disprove Schreiber's fairly well documented contention that asphyxia is responsible for many of the so-called congenital disorders of the brain. On page 218 is the statement, of questionable accuracy, that the chronic subdural hemorrhages of infancy and childhood are "unrelated to the birth process." Again evidence is not adduced to support this dictum, which furthermore is in direct contradiction to a statement made on page 137 of the same volume. On page 219 encephalography is advocated for the purpose of diagnosing subdural hemorrhage in newborn infants. On page 224 is the statement "All cases of ventricular hemorrhage (in infants) are fatal." It must be apparent that this is a dogmatic statement that may be true but is almost impossible of proof. On page 228 in a discussion of the pathophysiology of cerebral diplegia all of the relevant work done in the department of physiology at Yale has been completely ignored. On page 230 the statement that "removal of the roof of the (porencephalic) cyst causes cessation of the convulsions" is unfortunately not always true. Neither is the statement that "drug therapy is not effective" in such cases. The author has also been careless with his figures. On page 209 "about 0.085 per cent" should read "about 8.5 per cent" if the figures are correct as given. On page 222 it is stated that the "percentage of intracranial hemorrhage in the newborn" varies, according to the literature, from 12 to 85 per cent. Obviously the percentage in newborn infants that die is meant.

One possible general criticism of the book is the fact that there are but sixty-three illustrations. This is not a serious defect but additional illustrative material, particularly of gross pathologic specimens, would have enhanced the value of the book. There are abundant relevant references to the literature and a good index.

But few errors and misstatements occur in the book and they detract little from its very real value. They would not be worthy of mention did it not seem likely that the book would soon be reprinted.

On page 103 surely a superficial, not a "rough," examination is meant. On page 116 it is doubtful whether Wernicke's hemianopic pupillary reaction is ever "easily demonstrated." On page 120 some other salt of bromine than that of sodium is more logical in the treatment of aural vertigo. On page 121 interruption of the glossopharyngeal nerve does not result in "difficulty in swallowing," although interruption of the vagus does. On page 240 the attacks suffered by patient 5 appear to have been cerebellar fits rather than epileptiform convulsions. This may account for some of the difficulties encountered by the author in interpreting this case. On pages 241 and 245 is not the posterior cerebral rather than the occipital artery meant? On page 316 the statement "The traumatic psychosis may also occur when the major lesion is apparently outside the brain proper as in subdural and epidural hemorrhages" is the result of confused thinking. On page 422 it is doubtful that the internal hydrocephalus commonly associated with subdural hematomas results from "a block in the aqueduct of Sylvius." Rather, obliteration of the cerebral subarachnoid spaces is a more likely cause. On page 482 it is doubtful whether the statement that "the ligamenta flava . . . . constitute an integral part of the [intervertebral] disks" would be acceptable to most anatomists. On page 492 Oppenheim's disease and Werdnig-Hoffmann muscular atrophy have been omitted from the discussion of the differential diagnosis of injuries of the spinal cord sustained at birth. On page 519, in the discussion of the reduction of fracture-dislocations of the cervical spine, the use of skeletal traction applied by tongs or wires inserted in the skull, which is now one of the commonest methods of treatment, is ignored. On page 584, in some states, at least, "an accident resulting from a violation of the employer's rules or orders" is compensable. In a few instances considerable violence has been done to the English language; on page 220 "If the child is in poor shape"; on page 487 "sixty-four breech deaths." Others on pages 103 and 224 have been noted.

It is doubtful whether the treatment of osteomyelitis of the skull presented on pages 59 to 67, which is reminiscent of a decade ago, will meet with general approval.

Chapter 4, on concussion and contusion of the brain and their sequelae, is excellent. Yet it is difficult to agree with the author that mere similarity of the course of events is sufficient evidence on which to conclude that "the nature of the injury causing unconsciousness" is the same in patients suffering from concussion with unconsciousness of but a few minutes duration as in those in whom it persists for hours or days. It should also be noted that dehydration produced by magnesium sulfate by mouth has largely been abandoned as a form of treatment in cases of head injury in this country.

Chapter 12, on neuroses following head and brain injuries, is another that is instructive and interesting. It is obvious, however, that the author has been unable to do much to clarify the confusion as to what symptoms are the result of anatomic cerebral change and which are psychogenic. It is equally clear that he shares this confusion. He states that by definition traumatic neuroses merely follow physical trauma and "cannot be the result of the anatomical-physiological changes which were provoked by the trauma." Yet on pages 279-280 is found the statement "I differentiate, therefore, the neurosis after head injuries from other traumatic neuroses. This separation is based upon the production of changes in cerebral mechanisms facilitating neuroses."

On page 329, in discussing the psychotic states that follow cerebral injury, the authors appropriately emphasize the all too frequently unrecognized dangers of dehydration. This danger might well have found more extensive consideration elsewhere in this volume.

It should be repeated that the faults, where they are faults, although they have been cited in great detail, are in reality few indeed. This is a splendid book. It will prove of great usefulness to almost all branches of the medical profession. Certain of the chapters are small masterpieces and merit extensive study. Most noteworthy are chapter 4, on concussion and contusion, chapter 12, on the neuroses, chapter 15, on the relationship of brain injury to other organic diseases of the brain, and chapter 16, on the roentgenologic aspects of fracture of the skull and injuries of the brain.

**Ether-Soluble Plasma Phosphatides in Schizophrenia.** By Erkki Jokivartio. To be Presented, with the Permission of the Medical Faculty of the University of Helsinki, for Public Criticism in the Auditorium XII on November 8th 1939 at 12 Noon. Acta psychiatrica et neurologica, Supplementum XXI. Paper. Pp. 98, with one illustration. Copenhagen: Ejnar Munksgaard, 1939.

After a brief report on earlier works on lipids in schizophrenia the author's aim is to determine whether any definite changes occur in the phosphorus values of the plasmaphosphatides in schizophrenia. The phosphorus values of the ether-soluble phosphatides have been determined with a "stufenphotometer" according to a modified Bloor technic. Normal data were obtained by investigating twenty male and female attendants who lived on almost the same diet as the patients. The normal values for the ether-soluble plasma phosphatides vary from 8.42 to 12.87 mg. per hundred cubic centimeters (women show slightly higher values than the mean value of 10.22). The type of build (pyknic, leptosomatic and so on) has no distinct influence on the values, although in the pyknic group the average values are slightly higher than in the other groups. The average phosphorus value for the plasma phosphatides in forty cases of acute schizophrenia is 5.49 mg. per hundred cubic centimeters. This value is 4.43 mg. lower than

the average for normal subjects (153 determinations). In chronic schizophrenia the mean phosphorus value for the ether-soluble plasma phosphatides was 5.46 mg. per hundred cubic centimeters, or almost exactly the same as the mean value for acute cases (eighteen determinations). In defect schizophrenia the mean value was 8.30 mg. per hundred cubic centimeters, or slightly below the lower limit of 8.42 mg. for normal cases (forty tests). In cases in which metrazol or insulin treatment caused no improvement, the phosphatide values either decreased or remained unchanged. There is a rise in the phosphatide values in 47.6 per cent and a decrease in 52.4 per cent of the improved cases. According to the statements of the author there is a definite relation between the schizophrenic process and the decrease of plasma phosphatides.

**Textbook of the Principles and Practice of Nursing.** By Bertha Harmer, R.N., A.M., and Virginia Henderson, R.N., A.M., Instructor in Nursing Education, Teachers College, Columbia University, New York City. Fourth edition. Cloth. Price, $3. Pp. 1,047, with 256 illustrations. New York: Macmillan Company, 1939.

This comprehensive textbook dealing with hospital, home, public health and private duty nursing is divided into five parts: nursing and community health service, fundamentals of nursing care, assisting with diagnosis procedures, assisting the physician with therapeutic measures, and introduction to medical and surgical nursing. Each chapter has at its beginning a numbered table revealing the subject material covered, which increases the value of the work as a reference book. A bibliography is appended at the end of each chapter. In this edition a new sequence of topics has been adopted, the scope of the text has been enlarged and technics have been included that were not in general use at the time of publication of the previous edition. The material represents not only local opinon on the many phases of nursing but ideas from all over the world. Illustrations, charts and tables are appropriate and easily understood and should be helpful to the student nurse. On the whole, this book should be of much assistance to nursing instructors as well as to nurses in the field. It is a real tribute to the broad outlook of the authors.

**Ergebnisse der physikalisch-diätetischen Therapie.** Herausgegeben von Prof. Dr. H. Lampert, Direktor des Univ.Inst. für physikalische Therapie, Frankfurt a. M. In Gemeinschaft mit Prof. Dr. W. Heupke, Oberarzt an der Med. Universitäts-Poliklinik Frankfurt a. M., Hofrat Dr. J. Kowarschik, Primararzt und Vorstand des Institutes für physikalische Heilmethoden im Krankenhaus der Stadt Wien, und Doz. Dr. J. Kühnau, Direktor des Städt. Forsch.-Inst. für Bäderkunde und Rheumabollanst, Wiesbaden. Band I. Paper. Price, 25 marks. Pp. 410, with 94 illustrations. Dresden & Leipzig: Theodor Steinkopff, 1939.

This is the first of a series of monographs the object of which according to the preface is to report on new progress as well as on standard methods in physical therapy, in nutrition and dietetics including hormones and vitamins, in balneology and climatology, and in "sport medicine." Physical and dietetic methods have always been used in combination by German clinicians, especially at the spas, but under the new régime it has now been decreed not only that they are entitled to equal consideration with chemical or drug therapeutics but that increased attention must be paid to all "natural" healing methods. Many lay naturopaths accordingly have been admitted to practice their cult. The eleven monographs of this volume, however, have been written by prominent medical men and include a large variety of topics. The work treatment of diabetes is presented by Katsch, of Greifswald University, director of a diabetic home at the island of Rügen. Fever therapy with special regard to hot water baths is the work of Lampert, who finds hyperpyrexia by hot baths simple, safe and easily controllable. Gruner, of Lampert's institute, reports on the scientific basis of the partial bath, with special studies of its effect on the two principal constitutional types, the A or vagotonic type and the B or sympaticotonic. The practice and theory of thalassotherapy are presented by Häberlin, of Wyk, on the island of Föhr, and Amelung, of Königstein, writes on the limitation of artificial climate and the therapeutic necessity of the natural climate. There is an excellent presentation of the status of short wave diathermy by Kowarschik. There are contributions on the influence of preparation on the digestibility of vegetable foods by Heupke, of Frankfort on the Main, the dietetic treatment of cutaneous diseases by Schubert, of Frankfort on the Main, accessory foodstuffs in the nutrition of pregnant women by Gaehtgens, of Leipzig, physical dietetic treatment of exophthalmic goiter by May, of Kreuth, and protamine zinc insulin by Reinwein, of Giessen. There are many illustrations and tables. An extensive bibliography is appended to each monograph, and there is a complete subject and author index at the end of the volume, which lives up to the best German tradition of thorough study and scholarly presentation.

**Lehrbuch der Augenheilkunde.** Von Dr. Ernst Fuchs. Sixteenth edition by Dr. Adalbert Fuchs, a. o. Professor der Augenheilkunde an der Universität in Wien. Paper. Price, 27 marks. Pp. 917, with 367 illustrations. Vienna: Franz Deuticke, 1939.

This edition of a worldwide recognized textbook of ophthalmology is revised by the author's son, Dr. Adalbert Fuchs. The previous three German editions were edited by Prof. M. Salzmann, of Graz, Austria. No word of comment need be added to characterize a volume which has had sixteen editions in the original language and has been translated for the use of ophthalmologists in nearly every country of the globe. Previous English translations and editorship were under the capable hands of the late Dr. Alexander Duane, except for the fifteenth edition. Many of Dr. Duane's additions have found their way into the later German revisions. The contributions made by Adalbert Fuchs to the present volume consist of excellent plates and descriptions of pathologic material taken from his own two volumes concerning the pathology of the eye by the same publisher. The specific contributions of Professor Salzmann consisting of colored plates of fundic conditions have been retained in the present volume. For readers of German the thoroughness and modernization of this volume leave little to be desired.

**Recent Advances in Anesthesia and Analgesia (Including Oxygen Therapy).** By C. Langton Hewer, M.B., B.S., D.A., Anesthetist and Demonstrator of Anesthetics, St. Bartholomew's Hospital, London. Third edition. Cloth. Price, $5. Pp. 333, with 132 illustrations. Philadelphia: Blakiston Company, 1939.

The author has done a rather good job of briefly mentioning most of the recent advances in anesthesia and analgesia, including oxygen therapy. Of necessity he must write concerning material that he himself is not familiar with and therefore the proof reading of such a volume is of the greatest importance, for publications concerning the use of anesthetics must be specific; if doses are erroneously stated, fatal results may occur. This is illustrated on page 152, where the author in speaking of pontocaine recommends a dose of 1 mg. per pound of body weight, plus 5 mg. Actually, this is the dose that should be recommended for procaine rather than pontocaine. In all probability the dose of pontocaine mentioned would be fatal in every case in which it was used or would leave the patient permanently paralyzed. The reference to this dose in the bibliography cannot be verified as to author or dose. For the most part the book is excellent, but the reader should realize that he cannot hold the author responsible for possible errors and that when an interesting agent or method has been briefly discussed the original authors should be referred to so that no misunderstanding can result through possible typographic or other error. This book will appeal to the experienced anesthetist more than to the student. One of the best features is the author's method of inserting the references in the bibliography.

**The Prognosis of Open Pulmonary Tuberculosis: A Clinical-Statistical Analysis.** By Gunnar Berg. Acta tuberculosea Scandinavica, Supplementum IV. Paper. Pp. 207, with 25 illustrations. Copenhagen: Einar Munksgaard, 1939.

Berg presents a review of the available literature on the prognosis in pulmonary tuberculosis. He then reports 6,156 cases in which tubercle bacilli were present in the sputum which had been seen in the city of Gothenburg between 1910 and 1934. The patients were all adults. He found that from 70 to 80 per cent of patients suffering from pulmonary tuberculosis with bacilli in the sputum die within ten years. While the death rate is highest during the early years after the diagnosis is made and gradually decreases as the years pass, it is still four times as high as the normal death rate among those who survive twenty years. The mortality depends somewhat on the age at which the disease develops. For example, among those of from 15 to 19 years 82.3 per cent die within ten years, while of those who contract the disease between 35 and 39 years 70.3 per cent die within ten years. The death rate is especially

high for those who are found to have the disease beyond the age of 50 years. He found that collapse therapy did not affect the ultimate prognosis as much as one might expect. Indeed, he says, a rough estimate shows that collapse treatment cannot have been important as a direct cause of the decreased general mortality from pulmonary tuberculosis. However, because of the negative results, he urges that this must not be interpreted as a reason for abandoning collapse therapy, since the possibility that this kind of treatment has a small effect could not be entirely excluded from his observations and under such circumstances he believes that this method of treatment must be utilized as long as more effective methods are not available.

## *Bureau of Legal Medicine and Legislation*

### MEDICOLEGAL ABSTRACTS

**Workmen's Compensation Acts: Death from Perforation of Gastric Ulcer Induced by Worry Compensable.**—The claimant, wife of the deceased employee, filed a claim for compensation under the workmen's compensation act of Michigan for the death of her husband. The department of labor and industry awarded compensation and the employer appealed to the Supreme Court of Michigan.

For some time prior to Dec. 23, 1935, the employee had suffered from "stomach trouble." On the date mentioned he sustained a hernia in the course of his employment, for which he underwent an operation in February 1936. For this injury, the employee was paid compensation. A few days after the operation, pleurisy developed, but this seemed to clear up and he returned to work about eight weeks after being discharged from the hospital. Though continuing at work, the employee steadily lost weight, complained of pain in the abdomen and was always tired and his appetite was impaired. On Jan. 25, 1937, the employee underwent another operation and it was then discovered that a gastric ulcer had perforated the stomach. He died five days later from general peritonitis.

There was medical testimony to the effect that the treatment of a gastric ulcer consists essentially of rest, freedom from worry and generally building up the body vitality; that "worry is one of the prime causes of increasing the acidity of the stomach juice, which is a prime cause in speeding up the cause of ulcer, if not causing it"; that if the employee failed to regain his health following the injury "we have all of the factors which would have activated a pre-existing ulcer or speeding its course whenever it developed," and that, therefore, the perforation of the ulcer was directly connected with the industrial injury suffered by the employee. Although, said the Supreme Court, the testimony of the medical experts relied on by the department may not seem convincing, a court is not at liberty to weigh it or pass on the preponderance. In sustaining the award, the court quoted as follows from *Swanson* v. *Oliver Iron Mining Co.*, 266 Mich. 121, 253 N. W. 239:

> It is claimed there was no testimony indicating the injury suffered by Carl Swanson was the proximate cause of his death. He would have died some time anyway. Death is the common fate of man. The question is whether the injury accelerated his death; whether, by reason of the injury suffered by him, his death occurred sooner than it probably otherwise would. There was testimony indicating the injury suffered lowered his vitality and probably shortened his life. This was sufficient.

—*Rickard v. Bridgeman-Russell Co. et al. (Mich.), 284 N. W. 689.*

**Accident Insurance: Death from Septicemia and Erysipelas an Accidental Death.**—The defendant insurance company promised to pay double indemnity to the beneficiary under a life insurance policy if the insured's death "resulted directly and independently of all other causes from bodily injuries effected solely through external, violent and accidental causes, . . . by visible contusion or wound on the exterior of the body," provided that death did not "result directly or indirectly wholly or partly from . . . bacterial infections or from any disease." The insured, who was in good health and had no known preexisting infection or disease, sustained as a result of a friendly scuffle with a friend a slight abrasion on one of his cheeks. Within a few days erysipelas, with cutaneous eruptions and sore throat, developed. A few days later he died of septicemia and erysipelas, the sore throat being a contributing cause. The defendant company paid the insured's wife, the beneficiary, ordinary life insurance benefits but refused to pay her double idenmnity. The beneficiary then sued the defendant company to recover double indemnity benefits. The medical testimony was in accord that the abrasion on one of the insured's cheeks was the portal of entry into his body of the streptococci which caused the erysipelas and septicemia. From a judgment in favor of the plaintiff, the defendant insurance company appealed to the Supreme Court of Oklahoma.

The contention of the defendant company that it was not liable to pay double indemnity because the insured's death resulted from bacterial infection and disease did not meet with the approval of the Supreme Court. The policy of insurance in question did not exclude from its coverage infection and disease which follow and are attributable to an accident. It excluded only such infection and disease as predated the accident or accompanied or followed it without any causal relation to it. If the law were otherwise, said the court, under a policy of insurance which covers death occurring within ninety days of an accident, as did the policy in the instant case, an accidental injury which was certain to produce death within some thirty or sixty days would not be covered and so would not entitle the beneficiary to double indemnity if in the meantime the insured developed an infection or disease, even though such infection or disease was directly and unmistakeably produced by the injury. Accordingly, the Supreme Court affirmed the judgment in favor of the beneficiary.—*Central States Life Ins. Co. v. Jordan (Okla.), 86 P. (2d) 640.*

**Workmen's Compensation Acts: Compensability of Death Following Mental Overexertion.**—The employee was a timekeeper for the defendant company. During the latter part of July 1934, at a time when the temperature ranged from 87 to 90 F., he worked steadily for twenty-three hours in an effort to locate an error in the payroll records. Just as the error was discovered he slumped in his seat and died. The industrial board awarded compensation to the employee's widow and children on a finding that "twenty-three hours of continuous work constituted extraordinary exertion and that this extraordinary exertion is indirectly and causally connected with and responsible for the death of the decedent, said exertion and great mental effort, coupled with the fact that the decedent suffered from arteriosclerosis, resulting in his death from a cerebral hemorrhage." The court of common pleas, Montgomery County, Pa., affirmed the award and the employer appealed to the superior court of Pennsylvania.

In sustaining the judgment of the trial court, the superior court said: "The novel feature of this case is that the overexertion relied upon was more mental than muscular. We see no reason for holding that the overexertion which may make an injury or death resulting therefrom compensable must be solely physical in character. Authoritative definitions of 'exertion' do not confine its use to muscular effort. . . . As expressed by the court below, there is no fundamental difference in law or principle between an injury or death caused by the cutting or crushing of a blood vessel in the brain through the application of external violence and the breaking of one through increased internal pressure due to the putting forth of an unusual or abnormal mental effort." The employer appealed to the Supreme Court of Pennsylvania.

The testimony given by the expert witnesses in this case, said the Supreme Court, can support but one conclusion, namely, that it would be impossible to say that the death was the result of an accident in the course of employment. The family physician of the employee testified that any exertion or strain is liable to cause a hemorrhage where one is suffering from a disease of the cardiovascular system and that extra long hours of work might be an excessive strain which would accelerate death. He was unable to state, however, that the death in this case was the result of such a cause. A second physician, who was called when the employee died, was of the

opinion that death was due either to cerebral apoplexy or to an acute dilatation of the heart. He said that without an autopsy it would be impossible to state accurately from which cause the death resulted but ventured the opinion that acute dilatation of the heart was the most probable cause of death. He further stated, however, that the death had no relation to the employee's work but on the contrary was a natural consequence of the disease from which he suffered. A heart specialist, called by the referee at the claimant's request, testified that twenty-three hours' effort without cessation might have been a contributing factor in the death. He testified, further, that persons affected with arteriosclerosis are just as likely to die without any excessive mental or physical effort. Another heart specialist concluded that the death was not necessarily attributable to overexertion and expressed the opinion that "the cause of death most likely was coronary thrombosis." A fifth medical witness, who had never seen the employee either before or after his death, testified that he was of the opinion that death resulted from a cerebral hemorrhage and that death was accelerated by overexertion.

Of the five medical experts called, the court pointed out, four testified unequivocally that it was impossible definitely to establish any relationship between the extra hours of work and the death. The one physician who attempted to establish such a connection succeeded only in showing that overexertion could have brought about the death. To say, therefore, that death resulted from long hours of work, the court concluded, was at most a pure guess. The judgment of the superior court for the claimant was therefore reversed and judgment entered for the employer.—*Monahan v. Seeds & Durham et al. (Pa.), 3 A. (2d) 998; 6 A. (2d) 889.*

**Workmen's Compensation Acts: Disability Resulting from Inhalation of Paint Fumes Not an Occupational Disease.**—During the last four months of his employment as a metal worker and upholsterer the workman was exposed about four times a week for short periods of time to paint fumes discharged from a spray gun used by a fellow worker. On several of these occasions he became ill. After such an exposure on Oct. 9, 1937, he was forced to quit work and procure medical attention. In proceedings which he subsequently instituted under the workmen's compensation act of Oklahoma, based on an allegation that he had sustained an accidental injury as a result of the exposure to paint fumes, the two physicians who attended him testified that he "had a vasomotor disturbance" brought on by the exposure to paint fumes. Medical evidence offered on behalf of his employer and the insurance carrier, according to the reported decision, "definitely excluded any claim that respondent [the workman] might be suffering from an occupational disease." The industrial commission awarded him compensation and the employer and his insurance carrier obtained a review of the award in the Supreme Court of Oklahoma.

It was contended, among other things, that the disability of the workman was due to an occupational disease and not to an accidental injury and that a finding by the industrial commission that that disability had resulted from the inhalation of paint fumes established as a matter of law that an occupational disease was the cause of the disability. While it is settled in Oklahoma, said the Supreme Court, that compensation may not be awarded for a disability which results from an occupational disease, that principle is not here applicable, since the medical evidence adduced by the employer and the insurance carrier definitely eliminated from consideration any contention that the workman might be suffering from an occupational disease. It is likewise a settled doctrine in Oklahoma that the benefits of the workmen's compensation act are not confined to cases of traumatic injury and that inhalation of vapors, gas or dust may constitute an accidental injury within the meaning of the compensation act. The Supreme Court believed, accordingly, that there was competent evidence before the industrial commission to sustain a finding of accidental injury.

The award in favor of the workman, however, was vacated on other grounds not here material.—*Ross v. Ross (Okla.), 89 P. (2d) 338.*

# Society Proceedings

## COMING MEETINGS

American Medical Association, New York, June 10-14. Dr. Olin West, 535 N. Dearborn St., Chicago, Secretary.

American Association for the Surgery of Trauma, Atlantic City, N. J., June 7-8. Dr. Ralph G. Carothers, 409 Broadway, Cincinnati, Secretary.

American Association for Thoracic Surgery, Cleveland, June 6-8. Dr. Richard H. Meade Jr., 2116 Pine St., Philadelphia, Secretary.

American Association of Genito-Urinary Surgeons, Skytop, Pa., June 20-22. Dr. Charles C. Higgins, 2020 East 93d St., Cleveland, Secretary.

American Association on Mental Deficiency, Atlantic City, N. J., May 22-26. Dr. E. Arthur Whitney, Washington Road, Elwyn, Pa., Secretary.

American Broncho-Esophagological Association, New York, June 5. Dr. Paul Holinger, 1150 N. State St., Chicago, Secretary.

American College of Chest Physicians, New York, June 8-10. Dr. Robert B. Homan Jr., P. O. Box 1069, El Paso, Texas, Secretary.

American College of Radiology, New York, June 12. Mr. M. F. Cahal, 540 North Michigan Blvd., Chicago, Executive Secretary.

American Gastro-Enterological Association, Atlantic City, N. J., June 10-11. Dr. Albert F. R. Andresen, 88 Sixth Ave., Brooklyn, N. Y., Secretary.

American Gynecological Society, Quebec, Canada, June 17-19. Dr. Richard W. TeLinde, 11 East Chase St., Baltimore, Secretary.

American Heart Association, New York, June 7-8. Dr. Howard B. Sprague, 50 West 50th St., New York, Secretary.

American Laryngological Association, Rye, N. Y., May 27-29. Dr. C. J. Imperatori, 108 East 38th St., New York, Secretary.

American Laryngological, Rhinological and Otological Society, New York, June 6-8. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.

American Medical Women's Association, New York, June 9-10. Dr. Elizabeth Parker, 1835 Eye St., Washington, D. C., Secretary.

American Neurological Association, Rye, N. Y., June 5-7. Dr. Henry A. Riley, 117 East 72d St., New York, Secretary.

American Ophthalmological Society, Hot Springs, Va., June 3-5. Dr. Eugene M. Blake, 303 Whitney Ave., New Haven, Conn., Secretary.

American Otological Society, Rye, N. Y., May 30-31. Dr. Isidore Friesner, 36 East 73d St., New York, Secretary Pro-Tem.

American Physiotherapy Association, New York, June 23-28. Mrs. Eloise T. Landis, 2065 Adelbert Rd., Cleveland, Secretary.

American Proctologic Society, Richmond, Va., June 9-11. Dr. Curtice Rosser, 710 Medical Arts Bldg., Dallas, Texas, Secretary.

American Psychiatric Association, Cincinnati, May 20-24. Dr. Arthur H. Ruggles, 370 Broad Blvd., Providence, R. I., Secretary.

American Radium Society, New York, June 10-11. Dr. William E. Costolow, 1407 South Hope St., Los Angeles, Secretary.

American Rheumatism Association, New York, June 10. Dr. Loring T. Swaim, 372 Marlborough St., Boston, Secretary.

American Society of Clinical Pathologists, New York, June 6-10. Dr. Alfred S. Giordano, 331 N. Main St., South Bend, Ind., Secretary.

American Therapeutic Society, New York, June 7-8. Dr. Oscar B. Hunter, 1835 Eye St. N.W., Washington, D. C., Secretary.

American Urological Association, Buffalo, N. Y., June 24-27. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.

Association for the Study of Internal Secretions, New York, June 10-11. Dr. E. Kost, 921 Westwood Blvd., Los Angeles, Secretary.

Connecticut State Medical Society, Hartford, May 22-23. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.

Illinois State Medical Society, Peoria, May 21-23. Dr. Harold M. Camp, 224 South Main St., Monmouth, Secretary.

Kansas Medical Society, Wichita, May 13-16. Mr. Clarence G. Munns, 113 West Sixth St., Topeka, Executive Secretary.

Maine Medical Association, Rangeley Lakes, June 23-25. Dr. F. R. Carter, 22 Arsenal St., Portland, Secretary.

Massachusetts Medical Society, Boston, May 21-22. Dr. Alexander S. Begg, 8 Fenway, Boston, Secretary.

Medical Library Association, Portland, Ore., June 25-27. Miss Anna C. Hoi, 25 Shattuck St., Boston, Secretary.

Mississippi State Medical Association, Jackson, May 14-16. Dr. T. M. Dye, McWilliams Bldg., Clarksdale, Secretary.

Montana Medical Association of, Bozeman, June 18-20. Dr. Thomas F. Walker, 206 Medical Arts Building, Great Falls, Secretary.

National Gastroenterological Association, New York, June 4-6. Dr. G. Randolph Siler, 319 - 1819 Broadway, New York, Secretary.

National Tuberculosis Association, Cleveland, June 3-6. Dr. Charles J. Hatfield, 50 West 50th St., New York, Secretary.

New Hampshire Medical Society, Manchester, May 14-15. Dr. Carleton R. Metcalf, 5 South State St., Concord, Secretary.

New Jersey, Medical Society of, Atlantic City, June 4-6. Dr. Alfred Stahl, 35 Lincoln Park, Newark, Secretary.

New Mexico Medical Society, Albuquerque, May 27-29. Dr. L. B. Cohenour, 219 West Central Ave., Albuquerque, Secretary.

New York State Association of Public Health Laboratories, Rochester, May 20. Miss Mary B. Kirkbride, New Scotland Ave., Albany, Secretary.

North Carolina, Medical Society of the State of, Pinehurst, May 13-15. Dr. T. W. M. Long, 321 Hamilton St., Roanoke Rapids, Secretary.

Ohio State Medical Association, Cincinnati, May 14-16. Mr. C. S. Nelson, 79 East State St., Columbus, Executive Secretary.

Pacific Northwest Medical Association, Spokane, Wash., June 26-29. Dr. C. W. Countryman, 407 Riverside Ave., Spokane, Wash., Secretary.

Rhode Island Medical Society, Providence, June 5-6. Dr. Guy W. Wells, 124 Waterman St., Providence, Secretary.

Society of Surgeons of New Jersey, Paterson, May 22. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.

South Dakota State Medical Association, Watertown, May 20-22. Dr. Clarence E. Sherwood, Madison, Secretary.

Texas, State Medical Association of, Dallas, May 13-16. Dr. Holman Taylor, 1404 West El Paso St., Fort Worth, Secretary.

# Current Medical Literature

## AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

### American Journal of Cancer, New York

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Effects of Colchicine and Radiation on Growth of Normal Tissues and Tumors. A. M. Brues, Beula B. Marble and Elizabeth B. Jackson, Boston.—p. 159.

Effect of Sex Hormones on Growth of Transplanted Mammary Adenofibroma in Rats. F. E. Mohs, Madison, Wis.—p. 212.

Reversibility of Hyalinization in Mouse Uterus Produced by Injections of Estrogen and Changes in Mammary Gland and Ovaries After Cessation of Injections. V. Suntzeff, R. S. Babcock and L. Loeb, St. Louis.—p. 217.

Results of "Functional Test" in Strain of Mice (C57 Black) with Low Breast Tumor Incidence. C. C. Little and J. Pearsons, Bar Harbor, Maine.—p. 224.

Observations on Three Functional Tests in High-Tumor and Low-Tumor Strain of Mice. Elizabeth Fekete, Bar Harbor, Maine.—p. 234.

Problems of Tissue Specificity and Chemotherapy of Cancer. L. C. Strong, New Haven, Conn.—p. 243.

Urinary Cholesterol in Cancer: II. H. Sobotka, Edith Bloch and A. B. Rosenbloom, New York.—p. 253.

Cancer of Tongue in Young Subjects: Report of Case. G. W. Saleeby, Beirut, Lebanon, Syria.—p. 257.

Simultaneous Occurrence of Two Types of Metastasizing Carcinoma in Stomach. P. J. Schneider, Baltimore.—p. 263.

Experiment in Feeding Wheat Germ Oil Prepared by Ether Extraction. D. L. Rider, Chicago.—p. 275.

### American Journal of Clinical Pathology, Baltimore

**10:133-204 (Feb.) 1940**

Identification of Inclusions in Virus Diseases. E. V. Cowdry, St. Louis.—p. 133.

Microprothrombin Test with Capillary Whole Blood: Modification of Quick's Quantitative Method. K. Kato, Chicago.—p. 147.

Prothrombin Studies, Especially in the Newborn. W. E. Bray and O. R. Kelley, Charlottesville, Va.—p. 154.

Dark Adaptation and Vitamin A Deficiency: New Technic. A. G. Sheftel, Los Angeles.—p. 168.

*Laboratory Diagnosis of Undulant Fever. L. Foshay, Cincinnati.—p. 176.

Detection, Identification and Quantitative Determination of Methyl Formate in Tissues: Report of Fatal Case. A. O. Gettler, New York.—p. 188.

**Laboratory Diagnosis of Undulant Fever.**—With proper materials and technic, Brucella can be recovered from the blood or body fluids of a fairly high proportion of patients with acute and subacute brucellosis. Foshay, however, points out that in the chronic stages of the disease, where the need for accurate diagnosis is the greatest, cultures from these sources are seldom successful. The reliability of the serum agglutination test suffers from various causes. Antigens used in one laboratory may not be agglutinated by a serum which agglutinates the strains from another laboratory. From 6 to 10 per cent of culturally proved acute cases fail to agglutinate. In other cases agglutinins appear only during the acute initial phase and seldom or never thereafter. In still others, agglutinins appear intermittently at irregular and unpredictable intervals. Agglutinins once acquired by infection may persist for years thereafter. Cross agglutination occurs infrequently but seldom causes much trouble in serums from patients. In the chronic disease a low titer, if any agglutination at all, is obtained, and it seems that there is no advantage to be gained by establishing a critical threshold. This would serve to emphasize the value of this test as an isolated diagnostic procedure and in the author's opinion it has already been overemphasized in this respect. Intradermal tests with vaccines, filtrates or protein derivatives of brucella cells are useful. The defects of agglutination and intradermal tests led Huddleson to revive phagocytic studies as diagnostic aids. Repeated monthly studies of many individuals over periods of years have partially confirmed the general usefulness of the procedure; nevertheless the Huddleson criteria cannot be accepted without reservations. The intradermal injection of specific immune serum is another diagnostic procedure in the stage of experimental study. In tularemia the test has a high degree of accuracy and reliability. It has not been used sufficiently to determine its accuracy in brucellosis. It has failed most frequently in the acute severe stages when positive cultures or high agglutinin titers satisfied diagnostic requirements. It is apparently more reliable as an indication of chronic infection. Subsequent testing of patients with positive serum tests and negative agglutination tests has occasionally revealed the reverse situation. There are therefore no laboratory tests without serious imperfections or limitations. Since each single test and various combinations of tests are known to have failed in some proportion when applied in culturally proved cases of undulant fever, the probability of total diagnostic failure can be diminished by the routine application of all tests to all patients suspected of having the disease. Excepting positive cultures, it is an error to place much reliance on any one test. Each test offers one more item to be weighed as evidence for or against the diagnosis of an infection which frequently requires more than the usual diagnostic methods. The final interpretation must therefore be made only in conjunction with clinical and blood observations which are compatible with those caused by brucellosis. The final decision must always remain with the clinician. At the present time the clinician is probably leaning too heavily on the laboratory for his diagnoses. In no other infection does a correct diagnosis depend more on comprehensive knowledge, extensive experience and sound judgment in relation to epidemiologic, clinical and laboratory observations.

### Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

**43:153-304 (Feb.) 1940. Partial Index**

Tuberculous Tracheobronchitis: Roentgen Pathology. C. B. Peirce, Montreal, and C. Curtzwiler, Ann Arbor, Mich.—p. 153.

Roentgen Aspects of Upper Retro-Esophageal Pulmonary Borders. H. C. Maier, New York.—p. 168.

Diagnostic Problems in Surgery of Upper Urinary Tract. M. Muschat, Philadelphia.—p. 187.

Microtia and Congenital Atresia of External Auditory Canal: Demonstration of External Auditory Canal by Means of Tomography. J. D. Camp and E. P. Allen, Rochester, Minn.—p. 201.

*Roentgenologic and Pathologic Considerations of Ewing's Tumor of Bone. J. M. Neely and F. T. Rogers, Ann Arbor, Mich.—p. 204.

*Quiescent Interval and Bone Metastases in Lymphosarcoma. C. Moore and G. L. Weller Jr., Washington, D. C.—p. 211.

Intracranial Complications Following Irradiation for Carcinoma of Scalp. E. P. Pendergrass, P. J. Hodes and R. A. Groff, Philadelphia.—p. 214.

Weak Radium Needle Technic in Carcinoma of Cheek. C. L. Martin, Dallas, Texas.—p. 226.

*Vitamin $B_1$ in Irradiation Sickness: Preliminary Report. Allison E. Imler and H. Wammock, Philadelphia.—p. 243.

Effect of Roentgen Rays on Bacteriophage: Studies in Bacterial Metabolism. A. I. Kendall and Charlotte Anne Colwell, Chicago.—p. 262.

Biology of Cancer Cell. S. P. Reimann, Philadelphia.—p. 275.

**Ewing's Tumor.**—Neely and Rogers state that Ewing's tumor represents an arbitrary subdivision of malignant bone neoplasms. Histopathologically it cannot be considered a neoplastic entity. X-ray signs of Ewing's tumor are not unequivocally characteristic. They result from destructive and reparative processes in osseous tissue any of which may be seen in osteogenic sarcoma, metastatic tumor or non-neoplastic lesions. Correlation of clinical, roentgenologic and histopathologic data is necessary to establish the correct diagnosis and proper classification of primary bone tumors. Biopsy should be done as early as possible in any osseous lesion when a primary neoplasm is suspected. Roentgenograms of a classic example of Ewing's tumor usually show the lesion located in the diaphysis or metaphysis of long bones. The patient is generally less than 25 years of age, and pain, swelling, low grade fever and leukocytosis are common clinical observations. X-ray changes in early tumor development show slight thickening and increased density of bone cortex. Later mottled rarefaction and periosteal reaction, showing lamination parallel to the long axis of bone, may occur. In still later stages there may be swelling of soft parts, more destruction of bone and rarely infiltration of the epiphysis. The only alteration found in the marrow cavity is irregularity and narrowing due to thickened cortex. Pathologic fracture rarely occurs. The tumor is extremely radiosensitive. Atypical variations of Ewing's tumor are often encountered. In bone sarcomas which are clinically and roentgenologically typical of Ewing's tumor the histopathology may differ widely from that usually considered characteristic. A case is cited which supports the contention of Melnick that the cell of origin in

Ewing's tumor is the undifferentiated mesenchymal cell, which in postnatal life is found about small blood vessels and capillaries. In accordance with this conception a typical Ewing's tumor is an undifferentiated round cell sarcoma composed of cells not yet differentiated sufficiently to form reticulum. In atypical neoplasms in which tumor cells may be slightly more differentiated they may assume morphologic and physiologic properties of the fibroblast or fibrocyte, become spindle shaped, produce reticulum and, with still more cellular differentiation, possibly form bone. Differentiation may also proceed along another line producing reticulo-endothelium and myelocytic elements and may resemble the microscopic picture found in lymphoblastoma. The cell of origin, therefore, in Ewing's tumor, fibrosarcoma, osteogenic sarcoma and lymphoblastoma is the same and histopathologic classification depends on the line and extent of differentiation of tumor cells. The division of the clinical entities becomes arbitrary and must be based on clinical, roentgenologic and histopathologic criteria.

**Bone Metastases in Lymphosarcoma.**—Moore and Weller report a case of lymphosarcoma of the round cell type in which a period of four years elapsed between the appearance of the tumor and the quiescent interval. During this time the patient's symptoms were not sufficient to necessitate communicating with his physician, who had previously made a diagnosis of lymphosarcoma from biopsy. Numerous discrete nodules in each submaxillary space and in both carotid chains and small but palpable glands in both axillae and both groins were present. Biopsy of two inguinal lymph nodes showed an overgrowth of small round cells with partial destruction of the normal architecture. Following roentgen treatment the patient remained well for four years. In the literature the "simple lymphomata," "lymphadenomata" or "hyperplastic lymphadenitis" cases are associated with long clinical courses. In none of these cases was there present metastasis to bones, while conversely in none of Craver and Copeland's cases with bone metastasis was the lymphosarcoma of the round cell type. The microscopic appearance of the lymph nodes in the authors' case, similar at the beginning and the end of the disease, is that of a supposedly benign lymphatic tumor. Necropsy was not permitted. Its metastasis to bone, rib, previously reported as occurring only in the reticulum cell type of lymphoma, is therefore unusual. The metastatic lesion in the rib was predominantly osteolytic in type. Attention to the rib metastasis was attracted by local pain. It seems unusual that the rib metastasis became evident soon after an excellent response to roentgen treatment had been obtained on the part of the mediastinal lymph nodes. According to the frequency of occurrence, metastases of lymphosarcoma to ribs are rare. Craver and Copeland state that osseous involvement, particularly of the vertebrae, occurs chiefly through extension. It is probable that the rib in the reported case was involved in this fashion.

**Vitamin $B_1$ for Irradiation Sickness.**—Imler and Wammock cite the results of oral or parenteral synthetic vitamin $B_1$ (thiamin chloride) therapy for the control of severe symptoms of radiation sickness in twenty-one cases. They find that daily injections of 3,000 international units will, in the majority of cases, give rapid and complete relief. Infrequently a recurrence of symptoms requires increase in the dosage. One patient receiving roentgen therapy to the left side of the neck required a temporary increase to 4,500 international units daily by hypodermic injection to control the recurrent nausea and another required 10,000 to eliminate nausea and vomiting. The results obtained with the hypodermic administration are definitely superior to those following the peroral use. The treatment of outpatients presents a problem in that radiation sickness cannot be satisfactorily relieved by the oral administration of large doses of vitamin $B_1$. It is difficult for these patients to retain their confidence and cooperation, with the result that they fail to continue the medication as prescribed and occasionally refuse to follow the course of radiation therapy. This undesirable factor can be overcome by requiring the patient to return for daily injections of vitamin $B_1$. Smaller daily doses are more effective than are massive doses given on alternate days. Daily or twice daily estimations of the vitamin $B_1$ content in the blood serum, beginning two days before radiation therapy is started, might indicate a possible direct relationship between the actual level of vitamin $B_1$ and the onset of radiation sickness.

## Annals of Internal Medicine, Lancaster, Pa.

**13**:1285-1566 (Feb.) 1940

Chemical Changes in Blood of Patients with Pyloric Obstruction. P. H. Noth and D. L. Wilbur, Rochester, Minn.—p. 1285.
Influence of Intravenous Glucose Injections on Abnormal Erythrocyte Sedimentation Speed in Relation to Activity of Infection. S. S. Lichtman, New York.—p. 1297.
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*Oil Aspiration Pneumonia and Pneumolipoidosis. P. G. C. Bishop, New York.—p. 1327.
*Diagnosis of Polycythemia. W. Dameshek and H. H. Henstell, Boston.—p. 1360.
Some Aspects of Psychoneuroses. Annette C. Washburne, Madison, Wis.—p. 1388.
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Respiratory and Circulatory System in Females with Ovarian Dysfunction. D. Scherf, New York.—p. 1414.
*Trichiniasis: Clinical Considerations. R. E. Kaufman, New York.—p. 1431.
Diffuse Primary Tuberculous Enterocolitis: Report of Two Cases. H. L. Bockus, H. Tumen and K. Kornbloom, Philadelphia.—p. 1461.
Chemical Specificity in Growth and Development. F. S. Hammett and S. P. Reimann, Philadelphia.—p. 1483.

**Oil Aspiration Pneumonia and Pneumolipoidosis.**—Bishop prefers the term "oil aspiration pneumonia" when the offending agent is a form of mineral oil and the term "pneumolipoidosis" when the offending agent is a true lipoid. The latter term is likewise suitable for the few cases in which there is no pneumonia due to bacterial infection and in which the lipoidosis may be of endogenous nature. The literature reveals 136 cases the majority of which were diagnosed at necropsy. The cases were reported from 1925 to 1938. Diagnosis during life is not dependent on one or several distinctive diagnostic features but may be arrived at in the presence of a history of the use of an oil or lipoid agent or when symptoms or conditions favoring aspiration, especially when lipoids or food may be the offending agent, are present. The symptoms are mainly those of associated diseases or disorders of the respiratory tract and other infectious diseases, central nervous system disorders, impaired general condition and feeding or swallowing difficulties. Physical examination reveals no specific signs. There is usually some degree of nutritional disturbance. Rapid respirations are frequently recorded. Fever, if present, is usually of low grade and the chest signs are those of the associated respiratory infection. The roentgenogram is of the greatest diagnostic value but may often be difficult to interpret, owing to other pulmonary diseases. A lack of change over a long period in serial roentgenograms is an important point. The sputum should always be examined for free oil droplets or large phagocytic monocytes containing fat or oil. Interval vital capacity estimations are recommended. In addition to gross and microscopic study, final diagnostic proof is obtained by identifying the offending agent by chemical analysis of the oil or lipoid in the involved pulmonary tissue. Scrapings from the cut surface of lungs in all cases of pulmonary examinations should be streaked and stained for fat at the time of necropsy. If this test is positive, qualitative and quantitative chemical analysis for fats should be done. The best therapy is prevention and then the treatment of the associated disease or disorder on which prognosis is dependent. In uncomplicated cases the prognosis is good. As for prophylaxis, common sense should be practiced in the use and administration of oil and lipoids. No harm is done provided the patient is in good general condition and if self administration is carried out under correct instruction or medical supervision. When an agent is prescribed, it should not be administered before retiring; if the patient is confined to bed utmost caution should be exercised in the amount, frequency and duration of administration; substitution therapy should be used and oil and lipoid agents abolished when the reflexes are subdued or absent. Iodized oil for bronchography should not be employed in suspected cases of pneumolipoidosis. In infants with conditions favoring aspiration, it is best to use fat free formulas.

**Diagnosis of Polycythemia.**—Dameshek and Henstell state that a correct diagnosis of polycythemia can usually be made from the history and the physical examination. Careful consideration of the laboratory observations leads to criteria for the establishment of a definite diagnosis and for differentiation of the doubtful from the true cases. The symptoms are in all probability due to an overloading of the circulation with resul-

tant sensations referable to the head, the cardiovascular system, the gastrointestinal tract and the extremities. In some cases a multiplicity of symptoms is present with the result that neurasthenia may be diagnosed. Most patients place emphasis on one bodily system or another. The authors report cases which show great differences in symptomatology. Certain symptoms, signs and laboratory tests when considered together make the diagnosis of "primary" or "true" polycythemia. The authors rely on the following as being of diagnostic value: headache, vertigo, visual disturbances, colored scotomas, paresthesias, vascular disturbances of the extremities, profuse hemorrhages after minor trauma, venous and arterial thrombosis and a multiplicity of symptoms. The diagnostic physical signs are plethoric appearance of the face and conjunctivae, dilated retinal veins, thickly coated and fissured tongue, splenomegaly, hepatomegaly, and red hands and feet. The diagnostic laboratory tests are elevated erythrocyte count (above 6 million per cubic millimeter), hemoglobin percentage, leukocyte count, polymorphonuclear percentage, platelet count, hematocrit value and blood volume, distended capillaries, sternal bone marrow biopsy (red cell hyperplasia and megakaryocytic hyperplasia) and elevated basal metabolic rate. Not every symptom or sign is present in every case. A plethoric appearance, splenomegaly or hepatomegaly, a definitely elevated erythrocyte count, an elevated platelet count and hematocrit value must be present before the diagnosis of primary polycythemia may be made. In a doubtful case, blood volume estimation and capillary microscopy may be helpful. Polycythemia vera is probably more common than is ordinarily suspected, particularly among Jews. Too often the obvious diagnosis is made and the possibility that "hypertension," "menopause" or "migraine" might in reality not be the ultimate diagnosis, but a symptomatic expression of some more general and more serious organic disorder is disregarded.

**Trichiniasis.**—Kaufman points out that occasionally there may be symptoms of a mild gastrointestinal upset, with nausea, vomiting and abdominal pain immediately after the ingestion of trichinous meat. The period of invasion begins from twenty-four to seventy-two hours later. Anorexia, nausea, vomiting, diarrhea and generalized abdominal pain are often present. These symptoms may be severe enough to resemble cholera. The incubation period is from two to twenty-seven days. The period of dissemination begins from six to ten days after eating the meat. The larvae migrate from the intestinal mucosa by way of the lymph and blood streams. The site of predilection and the final resting place for most of the larvae is the skeletal musculature, where they grow for about two weeks, when they begin to coil up and encyst. Fever from 100 to 106 F. is almost always present during the acute stage of the disease. The fever curve with the relative bradycardia produces a chart similar to that seen in typhoid. Fever, sweating, chills, itching, hypotension and weakness are probably due mainly to toxemia from the presence of the larvae and from muscle destruction. Dehydration, acidotic breathing, tetany and loss of weight are attributable to vomiting and diarrhea. The clinical picture depends on the tissues and organs invaded. The presence of the trichinae in the intestinal lumen and mucosa is responsible for the gastrointestinal symptoms which are usually present during the period of invasion; i. e., from the second to the eighth day after eating the infected meat. Invasion of the muscles of the trunk or extremities is manifested by edema, pain and tenderness. The pain, if located in the abdominal wall or back, may be severe enough to simulate renal, biliary or intestinal colic. There may be weakness of the muscle or even paralysis, suggestive of poliomyelitis. Involvement of the muscles of the respiratory tract is usually serious, as life may be threatened by asphyxia from edema of the pharynx and larynx. The muscles of mastication are sometimes the seat of edema, occasionally simulating mumps. Cough, sputum (usually mucopurulent), dyspnea, cyanosis and signs of pulmonary congestion or consolidation, alone or together, may be present. Bronchopneumonia or lobar pneumonia may be simulated or actually present. Pleurisy and pleural effusions occur. Hemoptysis has been reported. Symptoms and signs of central nervous system and peripheral nerve involvement are fairly common and may be severe. Diplopia or paralysis of the eye muscles is not rare. Reflex changes are common. Signs of meningeal irritation may be present. General signs of cerebral involvement may be present. Encephalitis due to the presence of the embryos in the brain has been reported. There may be dyspnea, orthopnea, cyanosis, palpitation and tachycardia. Scarlatiniform rash, erythema and subungual splinter hemorrhages have been frequently observed in some series and rarely in others. The kidneys occasionally show involvement, as manifested by albumin and casts in the urine. At necropsy fatty changes have been shown by the liver, in which larvae have been found. Larvae have been found in the retina. Otitis media has occurred as a complication of trichiniasis. Although the muscles of the tongue are sometimes affected, the sensation of taste does not seem to become impaired. The mesenteric lymph nodes show enlargement, an accumulation of eosinophils and occasionally larvae, especially in the early stages of the disease. The tracheobronchial nodes are similarly affected, although to a lesser degree. Larvae have been found in excised mammary gland tissue, human milk and the placenta.

## Archives of Dermatology and Syphilology, Chicago

**41:451-638 (March) 1940**

Pyoderma Faciale. P. A. O'Leary and R. R. Kierland, Rochester, Minn.—p. 451.
Pinta in Cuba: Special Clinical Features of Cuban Cases and Discovery of Spirochete in Active Lesions and in Lymph Glands. B. Sáenz, in collaboration with J. Grau Triana and J. A. Armenteros, Habana, Cuba.—p. 463.
Recklinghausen's Disease: Its Elusive Manifestations and Internal Relations. O. L. Levin and H. T. Behrman, New York.—p. 480.
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Blood Iodine of Patients with Acne Vulgaris. E. F. Traub and R. Emmet, New York.—p. 506.
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Erythema Annulare Rheumaticum (Lehndorff-Leiner): Report of Case. E. Urbach and A. Bleier, Philadelphia.—p. 515.
*Treatment of Pruritus Ani by Tattooing with Mercury Sulfide. R. Turell, A. M. Buda and A. W. M. Marino, Brooklyn.—p. 521.
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Effective Treatment of Varicose Ulcers of Leg. L. Isaak, New York.—p. 530.
*Disseminated Lupus Erythematosus Treated by Sulfanilamide: Report of Four Cases. A. L. Weiner, Cincinnati.—p. 534.
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*Treatment of Ragweed Dermatitis: Report of Seven Cases of Successful Treatment with Absolute Alcohol Extract of Ragweed Leaves. J. A. Clarke Jr., Philadelphia, and J. F. Riechiuti Jr., Mahanoy City, Pa.—p. 551.
Lymphogranuloma Venereum Affecting Simultaneously Cervical and Inguinal Lymphatic Glands: Report of Case. M. J. Costello and J. A. Cohen, New York.—p. 557.
Osteomatosis Cutis. C. Dietrich, Tacoma, Wash.—p. 562.

**Tattooing with Mercury Sulfide for Pruritus Ani.**—Turell and associates tattooed with mercury sulfide the perianal circumference in twenty-two cases of pruritus ani refractory to other treatment. The results obtained have been so satisfactory as to justify its continuation. A prolonged follow-up period will be necessary for the final evaluation of the method. Two private patients have been followed for more than nine months and the clinic patients for seven months. In one case there was a recurrence of the pruritus for four days fourteen weeks after the tattooing, but this disappeared spontaneously. The perineum and perianal region of this patient, an automobile mechanic, was constantly irritated by oil-laden clothes. However, the freedom from pruritus even for a short time was considered distinctly worth while by the patient. Another patient noticed a localized sensation two weeks after the left half of the perianal region was tattooed. A sensation in the perianal skin, which none of the patients described precisely but which was definitely unlike the character of the original pruritus, occurred in four other cases, in most of them within two weeks after completion of treatment. The sensation disappeared completely about a month after its appearance in one case. The modus operandi of this form of treatment is unknown. The mercury may have either an antiseptic action or a chemical effect on the cutaneous nerve supply. It is possible that the combined chemical and mechanical effects are essential. To determine whether the drug was necessary or not, four patients were treated with the tattoo machine but without the use of mercury sulfide. Relief from pruritus was obtained for a short time. In all cases the recur-

rent pruritus disappeared after the tattooing was done with mercury sulfide. It is also possible that the psychic element in some cases is as important as the physical and chemical aspects.

**Sulfanilamide for Disseminated Lupus Erythematosus.**—Weiner states that disseminated lupus erythematosus was arrested in two cases in which sulfanilamide was used. One of the patients has been followed for nearly two years and the other for several months. No effect was obtained in two other cases of disseminated lupus erythematosus in the terminal stages of the disease. Necropsy in these instances revealed changes in the small blood vessels of the kidneys and other viscera of a type recently described as characteristic of disseminated lupus erythematosus and related clinical syndromes. The usual precautions of sulfanilamide therapy should be taken in the treatment of lupus erythematosus, emphatic instructions to avoid sunlight being given. In view of the grave prognosis and unknown cause of disseminated lupus erythematosus, treatment with sulfanilamide or related compounds should be considered a practical measure.

**Treatment of Ragweed Dermatitis.**—Clarke and Ricchiuti used absolute alcohol extracts with success in the diagnosis and treatment of ragweed dermatitis in seven cases. Prophylactic treatments were given in three cases. In all there was a decided but not complete protection. In one case there was a complete absence of symptoms the following year without any treatment, phylactic or prophylactic. Seven phylactic or coseasonal treatments were given to six persons, and all six showed decided relief. Four of the seven persons gave definitely positive intradermal reactions to aqueous extracts of ragweed pollen. In these cases reactions could be reproduced by passive transfer (Prausnitz-Küstner technic). One person had indefinite nasal symptoms during the hay fever season, and two had asthma throughout the year. The authors believe that their success, in contrast to the failures of others, is due to the antigen entering the body in a suspension. In this way it is brought into immediate contact with a large number of body cells. When injected in oil it remains in solution and comes into contact with body cells much more slowly.

## Archives of Otolaryngology, Chicago

**31**:391-560 (March) 1940


Changes in Internal Ear Due to Increased Endocranial Pressure: Histologic Basis of Congestive Inner Ear. J. Fischer, Boston.—p. 391.
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Value of Encephalography in Diagnosis of Otogenic Intracranial Complications. R. Dinolt, Chicago.—p. 431.
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Borderline Allergy: Its Relation to Hyperplastic Disease of Respiratory Tract. N. Fox, J. W. Harned and S. Pelusc, Chicago.—p. 502.
Speech Hearing and Speech Interpretation Testing. D. Macfarlan, Philadelphia.—p. 517.


**Probable Pathogenic Streptococci and Staphylococci in Chronic Low Grade Illness.**—Stiles and Chapman made cultures of material from the nasal and oral cavities of 395 persons with low grade infections in order to determine the incidence of streptococci and staphylococci. Most of the patients complained of more than one disease; 96.3 per cent had clinical evidence of involvement of the nose or nasopharynx, 52.2 per cent had evidence of chronic sinusitis and 44.1 per cent had symptoms referred to as chronic nasopharyngitis by Burbank and sinusitis by Chase. There were thirty-one cases of tonsillitis and seventeen of other types of oral infection. Bronchitis was present in eighty-three cases, colitis or irritability of the colon in sixty-seven, recurrent or chronic gastro-enteritis in eighty-nine, symptoms referable to the biliary tract in eighty-two, inflammatory conditions of the urinary tract in thirty-eight, rheumatoid arthritis in sixteen and other forms of arthritis in thirty-eight. A group of fifty-two patients who had symptoms which have been called "prodromes to arthritis" were classified as having "rheumatism." At least one of these conditions was present in each case studied. In addition twenty-two patients had asthma, eighteen duodenal ulcer and twenty-two migraine. Only in vitro positive staphylococci and streptococci were considered in tabulating the observations. Of the 395 patients, 98.7 per cent had streptococci in at least one of the cultures, most frequently in the oral cavity. Staphylococci were found in 69.8 per cent of the cases and occurred most frequently in the nose. When the cultures were analyzed on the basis of the clinical condition there was a direct relationship between the severity of symptoms and the proportion of patients with streptococci in cultures from more than one source. There was no constant relationship between the incidence of staphylococci and the clinical severity, although there was a tendency toward a lower incidence among the patients with more severe symptoms and when the frequency of albus and aureus strains were compared a higher proportion of aureus strains, particularly from the nose, were present in cultures from patients with more serious conditions. Patients with sinusitis had a richer flora of streptococci and staphylococci in the nose and throat and a higher incidence of staphylococci but fewer fecal streptococci and staphylococci than did those with nasopharyngitis. Staphylococcus aureus was abundant in the noses and throats of patients with tonsillitis. Those with bronchitis yielded profuse growths of nasal and oral staphylococci. Patients with colitis had a high incidence (58.2 per cent) of fecal streptococci and Staphylococcus aureus (12 per cent). In cases of rheumatoid arthritis the incidence of staphylococci was 56.3 per cent and 50 per cent in the "other" types of arthritis. With "rheumatism" the incidence of fecal streptococci was 38.5 per cent and of oral and nasal strains of Staphylococcus aureus it was respectively 42.3 and 51.9 per cent. In cases of asthma the incidence of streptococci was 54.6 per cent, the proportion of patients with alpha and gamma streptococci in the feces and of those with gamma streptococci in the nose and throat being higher than in any other group.

## Archives of Pathology, Chicago

**29**:303-454 (March) 1940


Changes in Elasticity of Aorta with Age. J. Krafka Jr., Augusta, Ga.—p. 303.
Simmonds' Disease (Pituitary Cachexia) in an Aged Man with Dementia Praecox. Myrtelle M. Canavan, Boston.—p. 310.
Primary Amyloid Disease of Myocardium and Blood Vessels: Report of Case with Death from Myocardial Failure. C. H. Binford, Detroit.—p. 314.
Wave Mechanics of Smooth Muscle Action: XV. Experimental Multiple Reflections Between Intestinal Ligatures Transforming Traveling into Stationary Micropressure Waves in Smooth Muscle. E. J. Carey, Milwaukee.—p. 321.
Capillary Rupture with Intimal Hemorrhage in Causation of Cerebral Vascular Lesions. J. C. Paterson, Ottawa, Ont.—p. 345.
Effects of Prolonged Injections of Bovine Anterior Pituitary Extract on Bone and Cartilage of Guinea Pigs. M. Silberberg and Ruth Silberberg, St. Louis.—p. 355.
*Malignant Adenomas of Chromophobe Cells of Pituitary Body. O. T. Bailey and E. C. Cutler, Boston.—p. 368.
Neuronophagia in Human Cerebral Cortex in Senility and in Pathologic Conditions. W. Andrew, Dallas, Texas, and E. S. Cardwell Jr., Augusta, Ga.—p. 400.


**Malignant Chromophobe Adenomas of Pituitary Body.**—In the eighty-eight cases of chromophobe adenoma of the pituitary body encountered between 1928 and 1936, Bailey and Cutler observed three tumors which appeared different from the others. Because of the unusual clinical histories of the three cases and the invasive properties and distinctive microscopic appearance of the tumors, the three instances are presented separately. The tumors differed clinically from the usual benign chromophobe adenoma in that the symptoms progressed rapidly and extension of the tumor into the skull bones adjacent to the sella turcica, the neighboring brain substance and the nasopharynx was rapid. The early stages of the illness were dominated in the first case by ocular symptoms, in the second by uncinate seizures and in the third by nasal obstruction. The tumor cells were arranged in broad sheets separated from one another by a stroma which was altered in character from that of the normal pars anterior and was in part derived from struc-

tures at the edge of the tumor, far from the sella turcica. The authors set these tumors apart from the usual chromophobe adenomas. They suggest for them the term "malignant chromophobe adenoma," indicating that they are locally invasive and possess certain histologic characteristics of malignant tumors but do not metastasize either in the cerebrospinal axis or elsewhere. The malignant chromophobe adenoma is difficult to distinguish from chordoma and carcinoma of the sphenoid sinus or of the nasopharynx. The tendency of the malignant chromophobe adenoma to include large blood vessels in the sellar region makes surgical approach perilous. One patient responded most satisfactorily to roentgen therapy following a biopsy. In this case symptoms pointing to involvement of the temporal lobe were controlled. The other two patients, treated surgically, died.

## California and Western Medicine, San Francisco

**52**:103-150 (March) 1940

Summary of Pharmacology of Sulfanilamide and Related Compounds. W. C. Cutting, San Francisco, and W. L. Cover, San Bernardino.—p. 110.
Effective Sulfanilamide Dosage: Value of Quantitative Sulfanilamide Determinations. W. J. Mitchell, Los Angeles; P. M. Hamilton, Alhambra, and A. G. Bower, Glendale.—p. 113.
Acute Suppurative Pericarditis with Initial Leukemoid Blood Picture. M. Wolfson, Monterey, and J. C. Sharp, Salinas.—p. 116.

## Connecticut State Medical Journal, Hartford

**4**:123-184 (March) 1940

Acute Laryngotracheobronchitis. P. B. MacCready, New Haven.—p. 123.
Psychiatric Approach to Problems in General Medicine. J. H. Wall, White Plains, N. Y.—p. 127.
Modern Methods in Treatment of Pneumonia. C. S. Keefer, Boston.—p. 131.
Treatment of Pneumonia. L. H. Nahum, New Haven.—p. 135.
The Short Cycloplegia for Refraction. S. J. Beach, Portland, Maine.—p. 140.

## Endocrinology, Los Angeles

**26**:369-564 (March) 1940. **Partial Index**

Antigonadotropic Hormones in Normal Human Blood Serum. M.-D. Fellows, Rochester, N. Y.—p. 369.
Effects of Testosterone Propionate on Epiphysial Closure, Sodium and Chloride Balance and on Sperm Counts. E. P. McCullagh and F. J. McGurl, Cleveland.—p. 377.
*Masculinizing and Nonmasculinizing Carcinomas of Cortex of Adrenal Gland: Report of Six Adult Cases. T. H. McGavack, New York.—p. 396.
Age Distribution and Sex Incidence of Hyperthyroidism and Hypertension: Interrelation of These Two Conditions. S. K. Robinson, Chicago.—p. 409.
*Endocrine Aspect of Essential Hypertension and Diabetes Mellitus. J. H. Hutton, J. T. Case, W. L. Culpepper, E. C. Olson and E. E. Madden, Chicago.—p. 418.
Estrogen Metabolism in Cancerous and Noncancerous Women. G. Pincus and M. Grauhard, Worcester, Mass.—p. 427.
Alopecia Totalis, with Special Reference to Familial and Endocrine Factors. Juliet E. Thorner, Bakersfield, Calif.—p. 433.
Hexamine Insulin: Juvenile Type of Diabetes Treated with Hexamethylene Tetramine Insulin Compound Giving Rapid and Sustained Action. H. M. Feinblatt, E. A. Ferguson and B. Alpert, Brooklyn.—p. 437.
Increased Duration of Insulin Action by Use of Protamine Zinc Insulin in Pellet Form. J. Mark and G. R. Biskind, Baltimore.—p. 444.
Effect of Testosterone on Monkey Uterus and Administration of Steroidal Hormones in Form of Deanesly-Parkes Pellets. C. G. Hartman, Baltimore.—p. 449.
Recovery of Testes After Androgen Induced Inhibition. R. R. Greene and M. W. Burrill, Chicago.—p. 516.
Pharmacodynamic Effects of Testosterone Propionate on Tubal Contractions (Oviduct of Rabbit) Determined by Carbon Dioxide Insufflation. I. C. Rubin and A. M. Davids, New York.—p. 523.

**Masculinizing and Nonmasculinizing Adrenal Carcinomas.**—McGavack reports three cases of cancer of the cortex of the adrenal gland with masculinization and three without secondary sex changes. In four the diagnosis was confirmed at necropsy and in two by operation and biopsy. In three women the adrenal neoplasm was associated with masculinization; two of these, aged 29 and 38, presented the adrenogenital syndrome and late in the course of their disease evidence of chronic adrenal insufficiency. The clinical picture of the third, aged 34, resembled that of Cushing's "basophilism." An abdominal mass was the only common feature of the persons without virilism, of whom two were women aged 70 and 37. Prior to death Addison's disease developed in one of the women; the other maintained a state of low grade sepsis for at least five months before death. The abdominal mass and the cachexia were the only features of the disease in the one man. Estimations of estrogen, gonadotropic factor of the pituitary and "androgenic or androgenic-like materials" in the urine of eighteen patients are recorded. High estrogen values were obtained only in the urines from patients with carcinoma of the adrenal gland, and increased bitterling responses in hyperplasia of the adrenal cortex. The relative frequency of adenomas and carcinomas of the cortex of the adrenal gland is discussed, and the large number of possible syndromes which could be clinically associated with the latter is suggested.

**Endocrine Aspect of Essential Hypertension and Diabetes Mellitus.**—Hutton and his associates employed the inhibitory or regulatory effects of x-rays on the endocrine functions of the pituitary and the adrenals in the treatment of cases of diabetes and hypertension; 120 kilovolts, 3 milliamperes, 2 mm. of aluminum filter, 50 cm. skin target distance and 50 roentgens at the surface of each port of entry were found most effective. The pituitary region was irradiated from both sides through a port measuring 10 by 10 cm. The adrenal areas were treated through a common port 15 by 15 cm. The three areas were treated the same day. The treatment has been repeated at six weekly intervals when needed. After a rest of six weeks the series may be repeated. If symptomatic relief or a marked fall in blood pressure occurs after the first or any subsequent treatment, no further exposure is given until there is a return of symptoms or a rise in blood pressure. Failure is most often due to too large doses or to treatments given at too frequent intervals or too close to the menstrual period. Treatment should not be given within ten days of the menstrual period. Of 354 patients with hypertension, 268 received three or more treatments and of these 60.4 per cent or 186 were improved; twenty-nine relapsed, 157 remained improved and eighty-two were not improved. Of the entire series fifty-nine received insufficient treatment and twenty-seven could not be traced. Improvement meant that in addition to symptomatic relief the systolic pressure was reduced at least 30 points and the diastolic 20 points. Relief of symptoms has been much more striking than reduction in blood pressure and has at times occurred when the blood pressure has been affected but little. The symptoms most often relieved have been headache, vertigo, precordial distress, irritability, pains in the legs, blurring of vision and menopausal disturbances. Tinnitus has been less regularly relieved. Certain changes following treatment were easily recognized and more positively evaluated than the subjective sensations described by patients. These were reduction in blood pressure, increase in renal function as measured by the phenolsulfonphthalein test, improvement of retinal lesions, reduction of the basal metabolism rate and improvement in the condition of the skin. The patients who received irradiation but obtained no benefit seem to become more susceptible to some of the vasodilators, particularly the nitrites. The response of thirty-four patients with both hypertension and diabetes was that both the hypertension and diabetes of thirteen improved, only the hypertension of seven, only the diabetes of four, one improved but later relapsed, two remained unimproved, six did not have sufficient treatment and one could not be traced. By improved the authors mean that the diabetic syndrome has greatly improved or has entirely disappeared and that the symptoms and blood pressure were influenced as in the patients with hypertension only.

## Georgia Medical Association Journal, Atlanta

**29**:45-88 (Feb.) 1940

State Aid Cancer Clinics: Methods and Records. J. L. Campbell, Atlanta.—p. 45.
State Aid in Cancer Control in Georgia. C. C. Harrold, Macon.—p. 48.
Treatment of Skin Cancer in Ambulatory Patients: Report and Review of 200 Cases. Howard Hailey and Hugh Hailey, Atlanta.—p. 50.
Choice of Treatment of Cancer of Breast. E. Callaway, LaGrange.—p. 53.
Cancer of Cervix. A. D. Little and J. J. Collins, Thomasville.—p. 57.
Malignancies Related to Venereal Disease: Development of Carcinoma Secondary to Venereal Lymphogranuloma and Granuloma, and Carcinoma. E. S. Cardwell Jr. and E. R. Pund, Augusta.—p. 60.
Methods and Value of Biopsies in Malignant Tumors. J. E. Scarborough, Emory University.—p. 63.
Some Common Endocrine Disorders in the Female, with Special Reference to Treatment with Male Sex Hormone. R. B. Greenblatt and R. Torpin, Augusta.—p. 68.
Pneumococcic Meningitis Treated with Sulfapyridine and Antipneumococcus Type I Antiserum: Report of Case. E. C. Herman, LaGrange.—p. 72.
Chronic Superficial Gastritis. C. F. Barnett, Atlanta.—p. 73.
Palliative Procedures for Inoperable Malignant Lesions of Colon. W. D. Wilson, Savannah.—p. 77.

## Iowa State Medical Society Journal, Des Moines

**30**:45-94 (Feb.) 1940

*Transient Antidiabetogenic Effect of Synthetic Adrenal Cortical Hormone: Cortate: Preliminary Observations. E. B. Winnett, J. W. Caldwell and J. E. Kabler, Des Moines.—p. 45.
Review of Experiences with Pharmacologic Shock Therapy. R. H. Young, Omaha.—p. 48.
Preanesthetic Medication. S. C. Cullen, Iowa City.—p. 51.
Coronary Thrombosis. J. S. McQuiston, Cedar Rapids.—p. 54.
Phlebitis and Thrombophlebitis of Lateral Sinus. G. F. Harkness, Davenport.—p. 59.
Tularemic Pneumonia: Case Report. I. Zifferstein, Mount Pleasant.—p. 65.

**Antidiabetogenic Effect of Adrenal Cortex Extract.**—Winnett and his associates cite two cases in which a synthetic adrenal cortex extract, cortate, has had an alleviating effect on diabetes. A marked hypoglycemia resulted from the administration of desoxycorticosterone acetate, necessitating reduction in the amount of insulin tolerated. The effect was rapid but transient with the amount of adrenal cortex extract given. Further experimentation will open new avenues for a clearer appreciation of the possible etiology of diabetes.

## Journal of Clinical Investigation, New York

**19**:267-436 (March) 1940

Studies on Neoplasms with Aid of Radioactive Phosphorus: I. Total Phosphorus Metabolism of Normal and Leukemic Mice. J. H. Lawrence, L. W. Tuttle, K. G. Scott and C. L. Connor, Berkeley, Calif.—p. 267.
Comparison of Procedures for Increasing Blood Flow to Limbs Using an Improved Optical Plethysmograph. G. W. Wright and K. Phelps, Cleveland.—p. 273.
Determination of Glomerular Filtration by Endogenous Creatinine Clearance. K. Steinitz and H. Türkand, Istanbul, Turkey.—p. 285.
Studies on Conditions of Glucose Excretion in Man. K. Steinitz, Istanbul, Turkey.—p. 299.
*Antibody Formation in Cases of Lobar Pneumonia Treated with Sulfapyridine. Y. Kneeland Jr. and Barbara Mulliken, New York.—p. 307.
Electrophoretic Analysis of Plasma and Urinary Proteins. J. A. Luetscher Jr., Boston.—p. 313.
Effect of Unilateral Spontaneous Pneumothorax on Circulation in Man. H. J. Stewart and R. L. Bailey Jr., New York.—p. 321.
Calcium and Phosphorus Metabolism in Osteomalacia: IX. Metabolic Behavior of Infants Fed on Breast Milk from Mothers Showing Various States of Vitamin D Nutrition. S. H. Liu, H. I. Chu, C. C. Su, T. F. Yu and T. Y. Cheng, Peiping, China.—p. 327.
Id.: X. Further Studies on Vitamin D Action: Early Signs of Depletion and Effect of Minimal Doses. H. I. Chu, S. H. Liu, T. F. Yu, H. C. Hsu, T. Y. Cheng and H. C. Chao, Peiping, China.—p. 349.
*Observations on Plasma Prothrombin and Effects of Vitamin K in Patients with Liver or Biliary Tract Disease. F. J. Pohle and J. K. Stewart, Madison, Wis.—p. 365.
Observations on Serum Cholesterol in Acute Infections as Recorded During and After Pneumonia. A. Steiner and K. B. Turner, New York.—p. 373.
Four Recent Influenza Epidemics: Experimental Study. F. L. Horsfall Jr., R. G. Hahn and E. R. Rickard, New York.—p. 379.
Studies of Rheumatic Disease: III. Familial Association and Aggregation in Rheumatic Disease. R. L. Gauld and Frances E. M. Read, Baltimore.—p. 393.
Urinary Excretion of Thiamin in Clinical Cases and Value of Such Analyses in Diagnosis of Thiamin Deficiency. W. D. Robinson, D. Melnick and H. Field Jr., Ann Arbor, Mich.—p. 399.
Glycine Tolerance Test in Sprue and Pernicious Anemia. L. A. Erf and C. P. Rhoads, New York.—p. 409.
Study of Sulfur Metabolism and Effect of Sulfur Administration in Chronic Arthritis. R. H. Freyberg, W. D. Block and M. F. Fromer, Ann Arbor, Mich.—p. 423.

**Antibody Formation in Lobar Pneumonia Treated with Sulfapyridine.**—Kneeland and Mulliken studied nineteen cases of lobar pneumonia treated with sulfapyridine for the appearance of type specific antibodies. One hundred and twenty-seven samples of serum were tested by means of the precipitin reaction with specific polysaccharide. Only four cases showed an excess of type specific antibodies in the blood, and in these four the antibodies did not appear at the time of or immediately after the "crisis" induced by sulfapyridine. Antibodies in these four cases were first detectable after a week of normal temperature. The temperature fell to normal, following sulfapyridine therapy, within twenty-four hours in nine cases, within forty-eight hours in six and within seventy-two in four. The fall to normal in cases in which antibodies developed occurred in twenty-four hours in two cases, and in forty-eight and seventy-two hours respectively in the others. The duration of disease before treatment with sulfapyridine was begun was no greater in each type of case. The observations indicate that in nearly 80 per cent of the cases recovery took place without the appearance of an excess of type specific antibodies. As heretofore an excess of antibodies has been regarded as an essential part of the mechanism of spontaneous recovery from pneumonia, it must be concluded that sulfapyridine has supplanted, at least to some degree, this part of the immune mechanism. However, there is no evidence that antibody production ceases to occur in the presence of sulfapyridine; on the contrary, it is highly probable that it occurs at least to some extent. This is suggested by the cases in which antibodies appeared later in excess, implying that production has been going on at a slower rate, probably because the stimulus to antibody formation is lessened through the action of the drug on the invading organism. This abnormally low rate of antibody formation may explain the well known clinical observation that if treatment with sulfapyridine is stopped too soon a recrudescence of the pneumonia may take place. These observations do not settle the question as to whether therapeutic antiserum should or should not be given along with the drug; they merely indicate that demonstrable antibodies are not essential to recovery.

**Plasma Prothrombin and Vitamin K in Hepatic or Biliary Tract Disease.**—Pohle and Stewart present a study of vitamin K therapy in 136 consecutive cases of hepatic or biliary tract disease. In 47 per cent of the cases the plasma prothrombin was below normal. Intrinsic hepatic disease was a frequent cause of the prothrombin deficiency. A marked reduction of the plasma prothrombin was present in each of the ten cases in which abnormal bleeding occurred. The data suggest that hemorrhage should be anticipated when the prothrombin concentration is 30 per cent or lower. The effect on prothrombin of the oral administration of vitamin K and bile salts to forty-six jaundiced patients with a reduction in this coagulation factor was not uniform. Twenty-eight patients showed a satisfactory increase in prothrombin while eighteen showed no improvement. The failure of vitamin K and bile salts to produce an increase in prothrombin in certain cases of jaundice is often due to the presence of extensive hepatic damage. The decrease in prothrombin, not uncommon after surgical intervention in jaundiced patients, is especially likely to occur if hepatic damage is present. These studies suggest that, in the absence of obstructive jaundice, external biliary fistula or an abnormal intestinal absorptive surface, the plasma prothrombin concentration serves as a measure of hepatic function.

## Journal-Lancet, Minneapolis

**60**:95-140 (March) 1940

Acute Infections of Upper Respiratory Tract. H. L. Williams, Rochester, Minn.—p. 95.
Practical Cooperation Between Practicing Physician and Diagnostic Laboratory. J. C. Ohlmacher, Vermillion, S. D.—p. 98.
Diagnosis and Management of Surgical Gallbladder: Review of 484 Cases. E. M. Jones, St. Paul.—p. 102.
Analysis of Some Factors in Personality Influencing Health. H. B. Hannah, Minneapolis.—p. 105.
Efficiency of Intermediate Dilution of Tuberculin (P. P. D.) in Determining Tuberculosis Infection Rate. M. W. Husband, Manhattan, Kan.; G. M. Tice, Kansas City, Kan., and D. T. Loy, Manhattan, Kan.—p. 108.
Some Painful Conditions About Head and Face. G. R. Kamman, St. Paul.—p. 111.
Diagnosis and Treatment of Endometriosis. E. Allen, Chicago.—p. 114.
Subcutaneous Liver Extract Therapy for Acne Vulgaris: Studies with Distillation and Evaporation. W. Marshall, Appleton, Wis.—p. 117.
Pneumoperitoneum for Treatment of Pulmonary Tuberculosis. A. L. Banyai, Wauwatosa, Wis.—p. 120.
Accidental Gunshot Wound of Head with Recovery: Case Report. L. R. Cole and E. R. Hodgson, Madison, Wis.—p. 124.
*Epilepsy Among College Students. L. E. Himler and T. Raphael, Ann Arbor, Mich.—p. 125.

**Epilepsy Among College Students.**—During a period of nine years with a total enrolment of 118,532 students, seventy came to the attention of Himler and Raphael because of petit or grand mal seizures. Particular effort was made to exclude all cases of simple syncope, hysterical reactions or other unconscious states not possessing the characteristics of epileptic attacks. Of the seventy epileptic students (fifty men and twenty women) forty-four had attacks before coming to the university and twenty-six had their first seizures subsequent to entrance. Grand mal attacks, with or without accompanying petit mal seizures, occurred in sixty-four and petit mal or narcoleptic attacks alone in six cases. The incidence (0.06 per cent) as determined for the student body is not directly comparable to the general incidence of epilepsy but represents less than one eighth of that (0.5 per cent) estimated by Lennox for the adult population at large. Forty-six of the students came to the

attention of university health service physicians after the first attack on the campus had occurred, eighteen came for examination and treatment on their own initiative and only six were referred by parents, friends, relatives or home physicians. Increased understanding and cooperation on the part of the latter persons is much to be desired and should aid greatly with respect to optimal procedure, not only regarding admission but, if admission is advisable, with reference to proper curriculum planning and treatment during the college period. The convulsive state if viewed and appraised by colleges and universities on its clinical merits, broadly conceived, and not of necessity constituting a bar to positive college performance would do much to encourage a fuller and more frank cooperation by students, relatives and physicians.

## Journal of Nervous and Mental Disease, New York

**91:277-416 (March) 1940**

The Goodenough Test (Drawing a Man) in Chronic Encephalitis in Children. Lauretta Bender, New York.—p. 277.
Suicide Among Hospitalized Drug Addicts. M. J. Pescor, Fort Worth, Texas.—p. 287.
The Great Delusion. J. Favill, Chicago.—p. 306.
Retrospective Study of Case Involving Homicide. T. K. Rathmell and K. M. Corrin, Norristown, Pa.—p. 316.
Shall We Differentiate Between Schizophrenia and Dementia Praecox? L. W. Darrah, Northampton, Mass.—p. 323.
Problems of Shock Treatment in Schizophrenics. F. Kant, P. L. Phillips and R. M. Stolzheise, Hartford, Conn.—p. 329.

## Journal of Pharmacology & Exper. Therap., Baltimore

**68:301-418 (March) 1940**

Nature of Pilomotor Response to Acetyl Choline: Some Observations on Pharmacodynamics of Skin. J. M. Coon and S. Rothman, Chicago. —p. 301.
Extracellular and Intracellular Hydrogen Ion Concentration in Relation to Anesthetic Effects of Barbituric Acid Derivatives. G. H. A. Clowes, A. K. Keltch and M. E. Krahl, Woods Hole, Mass.—p. 312.
Role of Changes in Extracellular and Intracellular Hydrogen Ion Concentration in Action of Local Anesthetic Bases. M. E. Krahl, A. K. Keltch and G. H. A. Clowes, Woods Hole, Mass.—p. 330.
*Thiocyanate Formation in Cyanide Poisoning as Affected by Methylene Blue and Sodium Nitrite. R. G. Smith, B. Mukerji and J. H. Seabury, Ann Arbor, Mich.—p. 351.
Respiratory Alkalosis During Anesthesia: I. Effects on Circulatory, Respiratory and Muscular Activity. M. H. Seevers, R. T. Stormont and H. R. Hathaway, Madison, Wis.—p. 365.
Id.: II. Influence on Survival. M. H. Seevers and R. T. Stormont, Madison, Wis.—p. 383.
Effect of Quantity on Intensity and Duration of Local Anesthesia, Determined by a New Test. A. J. Leser.—p. 389.
Comparative Study of Twenty-Five Alkylthiobenzoates with Respect to Surface Anesthesia, Toxicity and Systemic Effects. H. R. Hulpieu, J. H. Kitchel and J. H. Weatherby, Indianapolis.—p. 395.
Therapeutic Activity of Sulfanilamide and Allied Compounds in Experimental Brucellosis of Mice. J. A. Kolmer, with assistance of Anna M. Rule, Philadelphia.—p. 406.
Excretion of Combined Form of Morphine in Tolerant and Nontolerant Dogs. E. G. Gross and V. Thompson, Iowa City.—p. 413.

**Thiocyanate Formation in Cyanide Poisoning.**—Smith and his co-workers studied the antidotal action of methylene blue and sodium nitrite in cyanide poisoning by determining whether they slowed the early formation of thiocyanate. Although the results do not permit unequivocal conclusions, they demonstrate a heretofore unknown action of methylene blue, that of promoting thiocyanate formation. The data obtained not only confirm the usual conception of the importance of thiocyanate formation in cyanide detoxication but advance the knowledge in this regard. The changes in the serum concentration and urinary excretion of thiocyanate after sublethal doses of cyanide were compared in dogs and rabbits treated and not treated with sodium nitrite and methylene blue. Cyanide caused a greater and more rapid increase and a more rapid fall in the serum thiocyanate concentration of the rabbit than of the dog. Sodium nitrite caused a definite initial depression of the increase in serum thiocyanate concentration after cyanide, in keeping with the hypothesis that part of the cyanide is held as cyanmethemoglobin and is thus unavailable for thiocyanate formation. This effect was more marked in dogs than in rabbits. A part of this action of sodium nitrite is explained by a destructive effect on thiocyanate itself. Methylene blue stimulated thiocyanate formation in the rabbit and probably depressed this process in the dog. The recovery of cyanide as urinary thiocyanate was rapid in the rabbit and slow in the dog. The degree of recovery was low in the dog as compared with that in the rabbit.

## Journal of Thoracic Surgery, St. Louis

**9:237-356 (Feb.) 1940**

Pulmonary Ventilation and Anesthesia in Major Chest Surgery. C. Crafoord, Stockholm, Sweden.—p. 237.
Differential Pressures and Reduced Lung Function in Intrathoracic Operations. W. E. Adams, Chicago.—p. 254.
Hemicardiac Hypertrophy Due to Increased Peripheral Resistance: Study of Pulmonic and Aortic Stenosis Experimentally Produced. E. Holman, San Francisco.—p. 262.
Postnatal Growth of Lung. R. Cohn, San Francisco.—p. 274.
Notes on Gunshot Wounds of Chest. F. T. Ranson, Shanghai, China. —p. 278.
Self-Retaining Scapula Retractor. R. H. Overholt, Boston.—p. 291.
*Putrid Lung Abscess: Pathogenesis, Prognosis and Treatment. M. B. Rosenblatt, New York.—p. 294.
Logic of Collapse Therapy: Mathematical, Physiologic and Clinical Study. F. Baum, Newark, N. J.—p. 322.
Primary (Bronchiogenic) Carcinoma of Lung, with Histopathologic Study of Forty Necropsies. J. Rabinovitch, L. A. Hochberg and M. Lederer, Brooklyn.—p. 332.
Differential Intrabronchial Pressures and Mediastinal Emphysema. R. J. Marcotte, F. P. Phillips, W. E. Adams and H. Livingstone, Chicago. —p. 346.

**Putrid Lung Abscess.**—Rosenblatt studied the records of ninety-four cases of putrid pulmonary abscess discharged from the medical, surgical and pediatric wards of the city hospital between 1920 and 1938. Abscesses occurring in bronchiectasis, aputrid necrosis complicating pneumococcic pneumonia, Friedländer pneumonia or miliary abscesses following bacteremia were not included. Tuberculosis was ruled out in all instances by sputum examination, guinea pig inoculation or necropsy. The cases were divided into those following operation (fifteen) and nonpostoperative (seventy-nine). The fifteen cases followed operation on the tonsils, teeth, jaw or nose, an appendectomy, herniotomy or mastoidectomy. Among the seventy-nine there were isolated instances which followed aspiration of a staple and of ammonia, submersion, hemiplegia and acute ulcerative tonsillitis. But in 94 per cent the abscess was not preceded by any known disease, accident or operation. However, the teeth and gums of sixty-two patients, 80 per cent, presented caries and gingival infection. This percentage was the same for the operative and nonoperative cases. The aspiration of septic tartar into the lungs as a cause for the development of putrid lung abscess deserves serious consideration. The frequent association of tonsillectomy, dental extraction and gingivodental infection strongly supports the aspiration theory. Routine smears and cultures of sputum or aspirated pus in about one third of the cases showed streptococci, both aerobic and facultative anaerobic, fusiform bacilli, spirochetes and unidentified gram negative bacilli. The earliest symptoms were usually those of an infection of the upper part of the respiratory tract and consisted chiefly of productive cough with foul mucoid expectoration and slight fever. Many patients in the nonoperative group gave a definite history of exposure to inclement weather the day before the onset of these symptoms. The foul expectoration usually appeared within two weeks of the onset of illness and occurred suddenly after a severe coughing paroxysm. In the majority of cases the sputum was also blood streaked, and not infrequently there were moderately severe pulmonary hemorrhages. The location of the abscess by physical signs was rendered difficult because of sibilant rales in apparently uninvolved portions of the lung. Bronchoscopy and x-ray examination were of the greatest assistance in diagnosing the exact source of suppuration. In all but two cases the abscess was localized to a single lobe, in sixty-one in the right upper, middle or lower lobe, and in thirty-five in left upper or lower lobe. Most of the lesions in the lower lobes were situated in the apical segments. About 10 per cent of the patients had syphilis, and an equal number had hypertensive or arteriosclerotic cardiovascular disease. Three patients had diabetes. Various complicating conditions occurred in individual instances. The most important complication of the abscess itself, in 12 per cent, was perforation into the pleural cavity with production of a putrid empyema. Cerebral metastases and bronchopneumonia and pulmonary extensions were other complications. Bronchopleural fistulas were present in all the surgical cases. Of the ninety-four cases, seventy-two were treated medically and twenty-two surgically. The medical procedures included postural drainage, bronchoscopic aspiration and irrigation, artificial pneumothorax, intravenous injection of arsphenamine and of guaiacol, rectal injection of ether in oil and oral administra-

tion of potassium iodide and sulfanilamide. The duration of illness in the medical cases ranged from sixteen to 3,217 days but was less than 150 days in the majority. The condition on discharge of the seventy-two medically treated patients was as follows: Four were cured, twenty-two improved, twelve unimproved and thirty-four dead. However, only three patients had no symptoms or x-ray evidence of abscess. Study of the other nineteen cases showed that seventeen were discharged with x-ray evidence of either a stationary or a progressive lesion and that two were discharged with characteristic symptoms of abscess. Most of the patients discharged as unimproved have frequent exacerbations of the abscess and they eventually die of the disease. The cause of twenty-three deaths was progression of the abscess, cardiac failure in three, pulmonary hemorrhage, cerebral metastases and bronchopneumonia in two each, and toxic hepatitis and gangrenous esophagitis in one each. Of the twenty-two patients treated surgically the operative procedure of one consisted of bronchoscopic removal of a staple, which resulted in a cure. The duration of illness in the other twenty-one cases ranged between three weeks and ten years. External drainage with evacuation of the cavity was the procedure used in all instances but one in which closed thoracotomy was done. Two patients were cured, four improved, three unimproved and twelve died. Four deaths occurred within twenty-four hours of operation and were due either to shock or to pulmonary edema, two occurred within two weeks of operation and were apparently due to emboli, and the remaining causes of death were progression of the disease in three, cerebral metastasis in one, bronchopneumonia in one and asphyxia due to a mucous plug in the trachea in one. The poor results of conservative treatment are obviously its indictments. Early excision and aeration of the abscess appears to be the rational solution to the problem. When this procedure has been followed, the percentage of cures is maximal and the mortality rate negligible.

## Maine Medical Association Journal, Portland

**31**:35-68 (Feb.) 1940

*Multiple Sclerosis (Disseminated Sclerosis): As Seen in Private and Hospital Practice. C. W. Steele and E. C. Higgins, Lewiston.—p. 35.
What Shall We Do with the Psychoneurotic? The General Practitioner's Point of View. M. W. Pearson, Ware, Mass.—p. 46.
Improving the Hospital Through Elevation of Professional Standards. J. C. Hiebert, Lewiston.—p. 52.

**31**:69-94 (March) 1940

Skin Testing for Undulant Fever in Maine: Results Obtained in 500 Unselected Hospital Patients. E. R. Blaisdell, Portland.—p. 85.

**Multiple Sclerosis.**—Steele and Higgins state that the cause of multiple sclerosis is unknown and that therefore the present treatment is empirical and extremely difficult of evaluation because of the characteristic spontaneous exacerbations and remissions in the natural course of the disease. Therefore it is not surprising that when a remission occurred the form of treatment given at the time received the credit. Nonspecific measures should consist of improving and maintaining the patient's general health and nutrition. The patient should rest during an exacerbation and until improvement begins, but he should be encouraged to live during remissions as nearly a normal life as his condition will permit. Foci of infection are best removed. Overfatigue is to be avoided. Inorganic and organic arsenic have long been a part of the older type of routine treatment for multiple sclerosis. Artificial pyrexia has been recommended, but most physicians who have had experience with it are not in favor of either foreign protein therapy or hyperpyrexia. They feel that it may more often than not make the patient worse. Until a larger series of cases has been studied, this form of treatment should be used with care and discretion. Steele and Higgins suggest that all early cases of multiple sclerosis be treated by a regimen of fresh air, sunshine, a diet rich in vitamins and protein, additional large doses of vitamin B and intramuscular injections of liver extract. Until such time as more is known about the cause of the disease, it would seem wiser to use the less concentrated liver extracts and products which contain both vitamin $B_1$ and $B_2$. Seven cases of multiple sclerosis in private and hospital practice are cited.

## New England Journal of Medicine, Boston

**222**:335-372 (Feb. 29) 1940

*Value of Routine Blood Protein Determinations: Report of Results in 320 Consecutive Cases. H. H. Shuman and H. Jeghers, Boston.—p. 335.
Surgical Problems in Diverticulitis. E. P. Hayden, Boston.—p. 340.
Antepartum Gas Bacillus Infection: Report of Case with Septicemia and Recovery But with Death of Fetus. S. A. Cosgrove and T. A. Barry, Jersey City, N. J.—p. 344.
Hyperinsulinism (Hypoglycemia): Report of Case. A. LaSalle, Somerset, Mass.—p. 348.
Children's Surgery. W. E. Ladd, Boston.—p. 349.

**Routine Blood Protein Determinations.**—Shuman and Jeghers point out that although many investigators have stressed the clinical importance of blood protein determinations the complexity of the available methods has hindered the widespread use of this procedure. The recently introduced Kagan method combined for the first time simplicity with the desired quantitative accuracy. The authors employed this method in 320 cases admitted to the Fifth Medical Service of the Boston City Hospital. Control tests were made on twenty-five persons. The blood sample was collected at the same time as for the routine Hinton test. Two cc. was placed in a small dry test tube and centrifuged until the serum separated from the clot. The serum and proteinometer remained at room temperature for ten minutes before using. By means of a calibrated pipet 0.015 cc. (15 cubic mm.) of serum was introduced into the glass cylinder of the proteinometer, and the time required for the drop of serum to fall 10 cm. through the oil was measured to one-tenth of a second by means of a stopwatch. The protein value of the serum was obtained from a calibrated chart, correction being made for the temperature of the oil. Most of the determinations required less than one minute. In 238 cases (74.5 per cent) the total protein values were within normal range of from 6 to 8 Gm. per hundred cubic centimeters. Almost 25 per cent of the patients had subnormal protein values. Edema was distinctly more common in the low protein group, so much so that it seemed justified to consider hypoproteinemia as the main or at least a contributing cause of edema. The difficulty of controlling cardiac decompensation in the presence of hypoproteinemia is particularly important and is often overlooked. The presence of edema indicates the necessity for determining the blood protein level. The influence of dehydration on the blood protein level is extremely important. It is common for very ill patients to be dehydrated on admission, thus increasing the total protein value of the blood. A true estimate of the blood protein level cannot be secured until the fluid balance of the body has been restored to normal. This should be considered in clinics where it is customary to take blood specimens immediately after the patient is admitted. The determination of the total blood protein value is the earliest laboratory test available for detection of a dietary deficiency. It is obvious that most persons with hypoproteinemia will respond favorably to dietary measures alone. However, the presence of liver disease and deficient gastrointestinal absorption or utilization may preclude such a simple approach. Where necessary, intravenous therapy in the form of blood transfusion or, if available in the future for general human use, injections of lyophile serum or amino acids would be indicated.

## Northwest Medicine, Seattle

**39**:41-80 (Feb.) 1940

Cholecystography: Appraisal After Fifteen Year Period. S. Moore, St. Louis.—p. 43.
Failure of Circulation: Mechanism of Various Types with Diagrammatic Illustrations. I. C. Brill, Portland, Ore.—p. 50.
Review of Vitamin K and Role of Phthiocol in Exerting Its Antihemorrhagic Activity. S. Vukov, Seattle.—p. 54.
Spontaneous Rupture of Heart: Report of Nine Cases. G. A. C. Snyder, Spokane, Wash.—p. 58.
Meckel's Diverticulum and Littré's Hernia: Report of Case. R. E. Ringo and M. R. Charlton, Tillamook, Ore.—p. 60.
Abdominal Injuries Due to Impalement of Rectum? Report of Two Cases. J. A. Duncan and R. D. Forbes, Seattle.—p. 61.
Arsenical Poisoning. J. Beeman, Portland, Ore.—p. 63.
Undulant Fever: Successful Treatment with Vaccine and Neoprontosil. Miriam Lincoln, Seattle.—p. 64.

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## Rocky Mountain Medical Journal, Denver

**37**:161-240 (March) 1940

Clinical Observations on Use and Method of Administration of Certain General Anesthetic Agents. J. S. Lundy and E. B. Tuohy, Rochester, Minn.—p. 179.
Physical, Physiologic and Psychologic Considerations in Selecting Personnel for Military Aviation. N. C. Mashburn, Randolph Field, Texas.—p. 181.
Disappointing Results of Gastro-Enterostomy. F. R. Harper, Denver.—p. 186.
Nonvenereal Syphilitic Infections. J. G. Hutton, Denver.—p. 191.
Traumatic Appendicitis. D. Prey and J. M. Foster Jr., Denver.—p. 197.
Diphtheria in Colorado: Historical Sketch. W. C. Mitchell, Denver.—p. 199.
Angina Pectoris. M. Katzman, Denver.—p. 205.

## South Carolina Medical Assn. Journal, Greenville

**36**:65-96 (March) 1940

Laryngotracheobronchitis with Loss of Cough Reflex: Report of Case. G. D. Johnson, Spartanburg.—p. 65.
Gunshot Perforation of Spleen and Diaphragm. E. F. Parker, Charleston.—p. 67.
Historical Sketch of the Medical Society of South Carolina. J. J. Ravenel, Charleston.—p. 69.
Spontaneous Osteomyelitis of Skull. N. O. Eaddy, Sumter.—p. 73.

## Southern Surgeon, Atlanta, Ga.

**9**:149-222 (March) 1940

Preoperative and Postoperative Use of Drugs in Surgery of Gastrointestinal Tract. Mims Gage, New Orleans.—p. 149.
Surgical Management of Biliary Tract Disease. J. R. Phillips, Houston, Texas, and L. F. Knoepp, Beaumont, Texas.—p. 158.
March Foot: Personal Experience. C. E. Newell, Chattanooga, Tenn.—p. 169.
Left Paraduodenal Hernia. J. Ziskind and H. J. Schattenberg, New Orleans.—p. 175.
Atypical Signs and Symptoms in Perforated Peptic Ulcer. J. Mooney Jr., Statesboro, Ga.—p. 179.
Massive Dilatation of Common Bile Duct: Presentation of Case with Report of Autopsy. E. Jelks, Jacksonville, Fla.—p. 187.
Simplified Automatic Intermitten Irrigator. H. C. Myers, Philippi, W. Va.—p. 193.

## Surgery, Gynecology and Obstetrics, Chicago

**70**:257-602 (Feb. 15) 1940

Essential Principles in Clean Wound Healing. A. O. Whipple, New York.—p. 257.
Vitamin and Protein Factors in Preoperative and Postoperative Care of Surgical Patient. E. Holman, San Francisco.—p. 261.
Reestablishment of Gastrointestinal Passage After Gastric Resection. E. Pólya, Budapest, Hungary.—p. 270.
Operability and Factors That Increase Curability of Carcinoma of Rectum. T. E. Jones, Cleveland.—p. 291.
Surgical Treatment of Duplications of Alimentary Tract; Enterogenous Cysts, Enteric Cysts or Ileum Duplex. W. E. Ladd and R. E. Gross, Boston.—p. 295.
*Control of Hemorrhagic Tendencies. W. Walters, Rochester, Minn.—p. 308.
Current Methods in Management of Peptic Ulcer. V. C. Hunt, Los Angeles.—p. 319.
*Foreign Bodies in Air and Food Passages: Observations on End Results in Series of 950 Cases. L. H. Clerf, Philadelphia.—p. 328.
*Water and Electrolyte Balance. F. A. Coller and W. G. Maddock, Ann Arbor, Mich.—p. 340.
Conservative Surgery in Treatment of Bone Tumors. D. B. Phemister, Chicago.—p. 355.
Decompression in Treatment of Intestinal Obstruction. C. G. Johnston, Detroit.—p. 365.
Management of Chronic Pelvic Infections. G. H. Gardner, Chicago.—p. 370.

**Control of Hemorrhagic Tendencies.**—Walters groups hemorrhagic tendencies of surgical patients into three divisions: bleeding from lesions of the gastrointestinal tract, bleeding in the presence of lesions of the biliary tract and jaundice and bleeding by patients having certain blood dyscrasias such as hemorrhagic purpura, hemophilia and pseudohemophilia. The most frequent cause of gastrointestinal bleeding is an ulcer of the posterior duodenal wall which perforates into the pancreas and erodes one of the branches of the gastroduodenal artery. Approximately two thirds of the patients who have duodenal ulcer do not have hemorrhages as a result of it. If these cases were included in a study to determine the incidence of fatal hemorrhage among patients having chronic duodenal ulcer the incidence would appear to be rather low, but if the incidence of fatal hemorrhage is determined among the 33 per cent of patients who do bleed it would be found to be much higher, varying from 14 (Holman) to 40 per cent (Finsterer). The condition of the patient with an acutely bleeding duodenal ulcer should be regarded as a surgical emergency and treated accordingly. When necessary the hemorrhage should be controlled by opening the duodenum and suture-ligating the gastroduodenal artery, provided the condition of the patient permits. Bleeding tumors of the stomach and colon may cause continuous bleeding without gastrointestinal symptoms. Anemia, weakness, dizziness and faintness may be the only symptoms present. Intestinal bleeding may occur as the result of an ulcer or an ulcer of Meckel's diverticulum. In jaundiced patients with hemorrhagic tendency the prothrombin clotting time of the blood may be prolonged. The oral administration of bile salts and vitamin K will decrease the prothrombin clotting, and bleeding will cease. Phthiocol, a naphthoquinone, has been reported to have physical and chemical properties similar to those of pure vitamin K. Immediate transfusions of blood and, later, ligation of the left coronary vein and possibly splenectomy have produced satisfactory results in several instances of bleeding from esophageal varices secondary to cirrhosis of the liver. Hemophilia and especially pseudohemophilia may be unsuspected until bleeding from operated regions calls attention to the blood dyscrasia. Cell free, normal plasma contains a substance which will shorten the coagulation time of the blood of patients who have hemophilia. Globulin can be precipitated from normal plasma which is as effective in controlling hemorrhage as cell free, normal plasma. The surgical treatment of hemorrhagic purpura or thrombocytopenia consists in the removal of the spleen. This should be done in the interval between hemorrhagic episodes. Although aplastic anemia and acute leukemia are diseases in which the hemorrhagic tendency occurs, their occurrence is infrequent among surgical patients. Treatment consists of the palliative administration of blood.

**Foreign Bodies in Air and Food Passages.**—Clerf reviews 950 cases of foreign bodies in the air and food passages. Dyspnea occurred more often and tracheotomy was required more frequently when the foreign bodies were of vegetal origin. Subcutaneous emphysema of the neck was observed frequently following tracheotomy. However, subcutaneous and mediastinal emphysema may develop before instrumentation or operation is instituted. Pulmonary abscess is an uncommon complication of bronchial foreign body. Bronchiectasis is often observed particularly in cases of foreign bodies of long sojourn and in complete bronchial obstruction with suppuration. Unfavorable developments are not as common following esophageal foreign bodies as in foreign bodies in the air passages. The common complications are injury to the esophageal wall with infection varying from traumatic esophagitis to mediastinitis. Fatal results may occur from pressure necrosis and erosion into a large vessel or perforation of its wall. There were sixteen deaths, or 1.68 per cent, in the 950 cases.

**Water and Electrolyte Balance.**—Coller and Maddock discuss the problem of water and electrolyte balance as it pertains to the surgical patient. The kidneys are most important in maintaining the water balance. A small volume of urine, particularly of high specific gravity, means insufficient available water. The patient who can eat and drink should seldom be and rarely is a water balance problem. In some disease conditions nothing can be taken by mouth and under these circumstances the water lost by vaporization and in the stool and urine must be replaced by parenteral injection, to tide over an emergency only. About 1,000 cc. of urine daily is recommended as a good output for the majority of surgical patients. For seriously ill patients, particularly those with sepsis, with severe biliary tract disease or with some renal impairment from any cause, a water intake that provides at least 1,500 cc. of urine daily is often desirable. From 2,000 to 2,500 cc. daily of fluid parenterally is ample for a great many patients who cannot take fluids by mouth. For those with complications, from 3,000 to 3,500 cc. daily may be necessary. Variations in the needs of patients under special conditions, for example during hot and humid weather when vaporation is great, must be kept in mind. Five or 10 per cent dextrose in distilled water is recommended for parenteral administration. Very little of the dextrose is excreted in the urine, the majority is rapidly oxidized or stored as glycogen, the water of the solution becomes available for all

purposes and it does not wash out appreciable amounts of sodium chloride through the kidneys unless an excess of this electrolyte is present. To provide for minor electrolyte losses the authors administer 500 cc. of Ringer's solution daily to patients whose chief need is water for vaporization and water for urine and who are receiving dextrose solution in water for that purpose. Abnormal losses of fluid from the body by vomiting result in both a loss of water and the substances in solution in that water and must be compensated for. Patients requiring electrolytes are divided into two groups: (1) those with normal electrolytes to begin with but who, while in the hospital, lose electrolyte containing fluids through vomiting, gastroduodenal suction and biliary or enterostomy drainage and (2) those patients with depleted electrolytes as a result of electrolyte fluid loss before admission to the hospital. There is some overlapping of these groups. The first group of patients should always have their electrolyte fluid losses measured, and occasionally the electrolytes can be restored by the oral administration of sodium chloride, hydrochloric acid, ammonium chloride or sodium bicarbonate. If parenteral therapy is needed and the fluid loss is replaced with an equal volume of Ringer's solution, an adequate replacement of the water and the predominant electrolyte loss is made. This volume for volume replacement is the fundamental procedure carried out in this group. The second group of patients usually needs a substantial amount of Ringer's solution to restore water and electrolyte composition to normal. To do this in a quantitative fashion, a clinical rule was developed that for each hundred milligrams that the plasma chloride level needs to be raised to reach the normal (560 mg. per hundred cubic centimeters) the patient should be given 0.5 Gm. of salt per kilogram of body weight.

## Tennessee State Medical Assn. Journal, Nashville

**33:79-118 (March) 1940**

Medical Aspects of Gallbladder Disease. L. Motley, Memphis.—p. 79.
Manifestations of Allergy Other Than Asthma. A. M. Goltman, Memphis.—p. 86.
Ten Year Review of Local Obstetrics. E. F. Buchner Jr., Chattanooga.—p. 91.
Management of Common Eye Conditions in the Field of the General Practitioner. E. L. Grubb, Knoxville.—p. 94.

## Union Médicale du Canada, Montreal

**69:233-348 (March) 1940**

*Efficacy of Sulfapyridine in Treatment of Acute Infections of Respiratory Trace of Children. L. C. Simard and A. Guilbeault.—p. 244.
Malignant Granulopenia: C'td. A. Marin.—p. 250.

**Sulfapyridine in Acute Respiratory Infections of Children.**—Simard and Guilbeault report the remarkable decline in mortality achieved by sulfapyridine in children's pneumonias and bronchopneumonias. In fifty-two cases treated with sulfapyridine only four deaths (7.6 per cent) occurred, as compared with twenty-four deaths (32.5 per cent) out of seventy-seven other cases and sixteen deaths (29 per cent) out of fifty-five cases in which the usual methods were used. The dosage employed by the authors was based on the body weight of the child, 1½ grains (0.1 Gm.) per pound on the first day and 1 grain (0.065 Gm.) per pound on subsequent days. An infant weighing 10 pounds (4.5 Kg.) would therefore receive on the first day 15 grains (1 Gm.) daily divided into six equal portions and given every four hours day and night and on subsequent days 10 grains (0.65 Gm.), apportioned and administered in the same way. Treatments ceased when pulmonary symptoms disappeared, and even sooner if rapid improvement was observed, though in no case before the return of normal temperature. In case of vomiting, sodium bicarbonate was added, the schedule of dosing continuing according to plan, and in persistent vomiting sulfapyridine was administered intramuscularly. Dosage based on the child's age was found to be less exact. Return of temperature to normal levels was noted within forty-eight hours when illness was no more than three days old. Prolonged administration is recommended in cases in which sulfapyridine treatment was delayed until after the fifth day after onset of the disease and when pulmonary signs persisted after defervescence. The authors call attention to the frequent concomitance of otitis with bronchopneumonias. In their fifty-two cases otitis was observed twenty-eight times (in the seventy-seven cases there were thirty-four complications with otitis and, in the fifty-five cases, thirty-one). Three cases selected for clinical comment presented bilateral suppurative otitis, which readily healed on surgical intervention. The authors believe that otitis in children is an obstacle to recovery from pneumonia and a cause of death, if neglected, because of toxic involvements to the lungs and meninges. An otoscope, they say, is as much needed as a stethescope in bronchopneumonias of children.

## West Virginia Medical Journal, Charleston

**36:97-144 (March) 1940**

Obstetric Complications with Conflicting Interest of Mother and Child. T. L. Montgomery, Philadelphia.—p. 97.
*Penetrating Wounds of Abdomen Inflicted by Firearms. H. H. Ritter, Montgomery.—p. 107.
Disease Prevention in Early Life. W. B. Hunter, Huntington.—p. 113.
Peroral Endoscopy: Discussion of Its Application in Diagnosis and Treatment. Sobisca S. Hall and H. V. Thomas, Clarksburg.—p. 117.
The Middle Ear from the Point of View of Infection. A. A. Seletz, Charleston.—p. 120.
Gelatin-Epinephrine Mixture as Medium for Pollen Administration. F. C. Reel, Charleston.—p. 126.
Autotransfusion in Traumatic Rupture of Spleen. P. Johnson, Fairmont.—p. 127.
Postgraduate Recommendations for West Virginia. G. M. Lyon, Huntington.—p. 128.

**Penetrating Wounds of Abdomen Inflicted by Firearms.**—Ritter declares that the severity of gunshot wounds of the abdomen is determined by the degree of visceral damage, the amount of hemorrhage and the time elapsed before surgical intervention. Visceral damage includes contusions, abrasions, penetrations, perforations and lacerations. The factor of the degree of visceral damage is out of control of surgery; therefore certain injuries will always carry a high mortality rate. Damage to a hollow viscus is more serious than to a solid one. A perforation of the stomach or small intestine is not as dangerous as one of the large bowel. The greater the number of perforations the more difficult and time consuming is their isolation and suture. Hemorrhage is partially under surgical control. Mason has suggested that shock in these cases is the direct result of hemorrhage. The time factor is under control of the surgeon to a much larger degree. The mortality rate increases with the time elapsed between the occurrence and operation. The course of a bullet through the abdomen may be almost fantastic, and because many of these patients appear to be in most excellent condition on admission, laparotomy is deferred. Roentgenographic and fluoroscopic study in showing the position of the bullet is often a definite aid. These facilities may also aid in tracing the course of the bullet when there is no point of exit and may give an indication as to what viscera were probably injured. Laparotomy remains the only sure method of diagnosing perforations and this should be done at the earliest time possible. Too early operation when shock exists may be just as disastrous as delayed operation in cases of hemorrhage. The two main causes of death in these injuries are extensive hemorrhage associated with shock and peritonitis. The use of blood transfusions is of paramount importance. Perhaps the best time to begin the transfusion is immediately after the abdomen has been opened and the bleeding points have been secured. Spinal anesthesia is to be avoided because it may produce shock. Ether is the most widely used because it is neither time consuming nor inadequate for exploratory laparotomy and gives the maximal relaxation. The author used pentothal sodium in only two cases and the results were so satisfactory that he is tempted to encourage its use. The necessity for speed (the operative time should not be longer than one hour) should not result in hasty exploration. Drainage of the peritoneum is not advocated. Postoperative treatment is most important. It should include all or most of the following measures: antitetanic and gas bacillus serum, external heat, carbon dioxide plus oxygen insufflations, prone position until shock is recovered from, sedation, nothing by mouth until normal peristalsis is restored, venoclysis and hypodermoclysis (governed by careful water balance consideration and blood chemistry determinations), blood transfusions and the control of distention and vomiting by rectal tube, gastric lavage and duodenal drainage. Gunshot wounds of the abdomen inflicted from a distance should be treated expectantly.

## FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Journal of Ophthalmology, London

**24**:105-152 (March) 1940

X-Ray Treatment of Malignant Tumors in Region of Eyes. D. W. Smithers.—p. 105.
Postcataract Hyphema. A. S. Philps.—p. 122.
Dislocation of Lenses, with Other Congenital Defects: Secondary Glaucoma. N. B. Harman and R. Buxton.—p. 135.
Retinitis Stellata in Connection with Focal Infection. B. Boros.—p. 137.

### British Journal of Surgery, Bristol

**27**:433-624 (Jan.) 1940

Unusual Case of Obstruction to Common Bile Duct (Choledochocele?). W. I. de C. Wheeler.—p. 446.
Sensibility in the Abdomen. V. J. Kinsella.—p. 449.
Removal of Large Spleens. A. K. Henry.—p. 464.
Jejunogastric Intussusception. R. Shackman.—p. 475.
Dislocation of Inferior Radio-Ulnar Joint as Complication of Fracture of Radius. G. Hyman and F. R. R. Martin.—p. 481.
Etiology of Hallux Rigidus. E. A. Jack.—p. 492.
Radium in Treatment of Carcinoma of Prostate. M. Silverstone.—p. 498.
Plethysmography of Skin in Investigation of Peripheral Vascular Diseases. R. H. Goetz.—p. 506.
*Precocious Puberty in a Boy of One Year. I. Fraser.—p. 521.
Closed Intrapleural Pneumolysis: Articulated Hook Cautery. R. J. C. Maxwell.—p. 527.
Remnants of Vitelline Vascular System as Cause of Intestinal Obstruction. J. S. Buchanan and H. Wapshaw.—p. 533.
Transplantation of Ureters into Large Bowel and Its Effect on Kidneys. C. Morson and W. H. Graham.—p. 540.
Postoperative Results of Nephrectomy. H. G. Hanley.—p. 553.
*Heparin in Thrombosis and Embolism. G. D. W. Murray.—p. 567.

**Precocious Puberty.**—Fraser reports a case of extreme virilism in a boy of 12 months, presumably the youngest on record. Precocity in bone and dentition was noted. The value of the capon and colorimetric tests, as well as the ponceau fuchsine stain, was demonstrated. The boy until the age of 6 months was a normal child, when the penis began to enlarge rapidly, the prostate became the size of a walnut and erections were almost constant. Masturbation took place frequently, pubic hair appeared and acne of puberty appeared on the face. The face became old for his age, the voice deep pitched, hands greatly enlarged and muscular development excessive, the appearance of the epiphyses was greatly in advance of his age and body weight increased out of all proportions. He ate about three times the supply of food normally given a child of his age. Mentally he was retarded. He was unable to talk and rarely used the "mamma-baba" words expected of a child of 12 months. He seemed to have little affection except for food. From the age of 6 months he lost his cleanly habits as regards urine and feces. He became bad tempered and difficult to manage. The author does not claim that these had any direct connection with his increased virilism. Briefly the boy's age was (1) by calendar 12 months, (2) by mental advancement 12 months, (3) by bone epiphyses 5 years, (4) by dentition 3 years, (5) by sexual organs (penis and prostate but not testicles) 18 years. Biologic tests carried out on the urine of the boy revealed that the child at 12 months of age was more virile than the average adult male. Abdominal exploration revealed a tumor the size of a golf ball above the right kidney. The rest of the abdominal contents felt normal. After a considerable delay the second operation was performed when the boy was 18 months old. A high kidney incision was made. The twelfth rib was retracted and the adrenal tumor delivered with much greater ease and less bleeding than was expected. The tumor was pyriform, with the apex apparently attached without a stem to the inferior vena cava. The child was back in bed in thirty minutes, recovered well and was taking fluids ravenously. Suddenly, twenty hours later, he collapsed and died. A complete necropsy was performed but no abnormality other than enlargement of the vesicles and prostate could be found.

**Heparin in Thrombosis and Embolism.**—Murray carried out experimental studies on dogs to determine whether heparin would prevent thrombosis. He found that superficial veins in the extremities of dogs may be moderately traumatized without producing thrombosis. He developed a technic by which thrombosis could be produced in more than 80 per cent of instances. Controlled experiments on animals have shown that purified heparin is nontoxic. Experiments on arteries and veins have shown conclusively that heparin will prevent thrombosis and clotting. Operations on blood vessels can be carried out experimentally with greater success by using heparin. By continued injection of this substance, blood vessels have been kept patent until healing has taken place. Venous grafts in arteries have been kept patent successfully and have functioned satisfactorily for about one year. In more than 400 cases in the Toronto General Hospital, heparin has been shown to have no toxic effect when reasonable doses are administered. In this group of cases there was no thrombosis of superficial or deep veins and in none did embolism occur. Cases of thrombophlebitis were thought to be improved by treatment with heparin. The effects of heparin in a few cases of pulmonary embolism were striking. With one possible exception further embolisms did not occur and no one died of pulmonary embolism. Embolectomies were all successful when the vessels were cleared satisfactorily and treatment with heparin was carried out. In one case a venous graft was placed in an artery, and this remained patent and functioned satisfactorily. In diseases in which clotting and thrombosis of blood vessels occurs, heparin may be of advantage. The work of Widstrom and Wilander in preventing clotting of inflammatory pleural exudates suggests possible uses for heparin in some of the lesions involving serous cavities.

### British Medical Journal, London

**1**:333-376 (March 2) 1940

The Public Health in War Time. A. MacNalty.—p. 333.
Influence of Low Oxygen Pressure in Atmosphere on Incidence of Primary Lung Tumors in Mice. J. A. Campbell.—p. 336.
Wounds Penetrating Knee Joint. E. L. Ferguson and L. F. Dangerfield.—p. 339.
Temperatures Lethal to the Louse. P. A. Buxton.—p. 341.
Effect of Follicular Hormone on Nonpatent Fallopian Tubes. Margaret Moore White.—p. 342.
Lateral Aberrant Thyroids. M. A. Hameed.—p. 344.

### Glasgow Medical Journal

**15**:41-72 (Feb.) 1940

Cyclopropane Anesthesia: Notes on 200 Cases. H. H. Pinkerton.—p. 41.

### Lancet, London

**1**:395-440 (March 2) 1940

*Perforated Peptic Ulcer: Changes in Age Incidence and Sex Distribution in Last 150 Years. D. Jennings.—p. 395.
B. L. B. (Boothby, Lovelace and Bulbulian) Mask for Administering Oxygen. W. I. Card, J. F. Smith, W. J. Griffiths, B. A. McSwiney and B. Savage.—p. 398.
Faulty Detoxication in Schizophrenia: Abnormal Excretion of Hippuric Acid After Administration of Sodium Benzoate. J. H. Quastel and W. T. Wales.—p. 402.
Faulty Detoxication in Mental Disorder. D. R. Davies and T. P. E. Hughes.—p. 403.
Endometriosis of Bladder. W. C. W. Nixon.—p. 405.
Absorption of Progesterone and Desoxycorticosterone from Tablets Implanted Subcutaneously. M. H. Warwick and A. S. Parkes.—p. 406.

**1**:441-486 (March 9) 1940

*Clinical Malaria in Children. Cicely D. Williams.—p. 441.
*Perforated Peptic Ulcer: Changes in Age Incidence and Sex Distribution in Last 150 Years. D. Jennings.—p. 444.
Lead Content of Human Blood. J. N. M. Chalmers.—p. 447.
Fractures of Neck of Femur in Convulsion Therapy. W. Gissane, D. Blair and B. K. Rank.—p. 450.

**Changes in Age Incidence and Sex Distribution of Peptic Ulcer.**—Jennings examined all available papers on acute perforations, besides a mass of unpublished material in England and abroad. He presents evidence that distinct groups of ulcer cases exist, that their incidence varies independently, that the present common type of pyloric ulcer was relatively uncommon up to recently, and that its increase is a true increase and not merely the result of better diagnosis and hospital service. In this extensive review the author emphasizes that too much attention has been paid to the constitutional factor in peptic ulcer and not enough to environmental causes. The history of uncomplicated ulcers is obscured by changes in diagnostic fashion and in the selection of patients admitted to the hospital or coming to necropsy. The history of perforated ulcer can be reconstructed from available records in several countries. Between 1850 and 1900, of every six free perforations into the peritoneal cavity, three affected young women under 25, one

an elderly woman, one an elderly man and one a young man. Since 1920, of every ten perforations, one has affected an elderly woman and nine men mostly in the middle years or younger. Perforations in young women form a sharply defined group, which increased rapidly at the beginning of the nineteenth century and died out completely and suddenly at the beginning of the twentieth, the same changes taking place at about the same time in Germany, France, Scandinavia and the English-speaking countries. This type of ulcer must therefore have been due to something in the environment or in the mode of life. Perforated pyloric ulcers in men can also be shown statistically to fall into at least two independent groups. One group is closely associated with lesser curve perforations. It has a similar incidence to that of perforation in women since 1920. The other group tends to affect younger men and has recently undergone a large increase in northwest Europe and presumably throughout the English-speaking countries. Owing to increased facilities for admission to the hospital and other factors, it is impossible to measure this increase directly in France, Germany, Italy, England and the United States, but there is evidence that in parts of Sweden the increase is from 300 to 600 per cent. This estimate agrees with the change in ratio from two men: one elderly woman to ten men: one elderly woman, which has taken place in several countries. It follows that something in the mode of life is also responsible for this type of perforation. It is impossible to find sources of information in western Europe or in the United States which would enable changes in incidence of uncomplicated ulcer to be estimated. Uncomplicated ulcers cannot therefore be proved to fall into the same categories as perforated ulcers, but there is indirect evidence that they do. The author urges that perforated peptic ulcers and many other so-called constitutional diseases should be notified. Thus accurate statistics could be compiled for cases of acute perforations and if such statistics were available for transition periods they would probably be of great service in elucidating the mechanism and in a campaign of prevention.

**Malaria in Children.**—Williams maintains that the clinical varieties of malaria are well defined but do not correspond to the different varieties of the parasite. The four types to be kept in mind in treating children are (1) acute malaria with parasites present and distinct symptoms, (2) chronic malaria with parasites present, (3) chronic malaise in children from a malarial country in whom no parasites can be found but who improve under adequate treatment with quinine and (4) presence of malarial parasites in blood of apparently normal children. These individuals are apt to develop an attack of fever if subjected to chill, overwork, underfeeding or strain. They are probably more subject to intercurrent diseases than are children whose blood is free from the parasite. A table listing the age incidence of malaria among 436 children at the Children's Hospital, Accra, showed that the ages varied between 2 weeks and 14 years. The author emphasizes that the manifestations of malaria are just as various in infants and children as they are in adults. Anemia and convulsions are more common, more severe and more sudden than in adults. The author advocates treatment with quinine and iron. For oral administration he considers quinine sulfate preferable to the hydrochloride. Intramuscular injections of quinine are often of value, particularly when gastrointestinal disturbances hinder the absorption of quinine given by mouth. In a malarial country attacks of fever are common in babies aged from 6 to 18 months. If the patient survives, immunity is gradually developed. Treatment with quinine does not seem to interfere with the development of immunity. Children should not be taken unnecessarily to a malarial country, but with intelligent cooperation from the parents many of the dangers can be avoided. Malaria is preventable. Children should be protected from mosquitoes by spending the hours after dusk and while sleeping during the day either in a screened room or under a mosquito net. Every effort must be made to provide an adequate and suitable diet to increase resistance. Prophylactic treatment with quinine is not advised by all authorities but it probably does some good. It is best given at bedtime. The parents should be taught that it is important for children to receive adequate treatment early in the disease. At the first sign of fever, quinine should be given and the child taken to a doctor.

## Medical Journal of Australia, Sydney

**1:215-252 (Feb. 17) 1940**

Intestinal Obstruction. I. B. Jose.—p. 215.
Preoperative and Postoperative Treatment of Acute Intestinal Obstruction. N. J. Bonnin.—p. 219.
*Hemolytic Streptococcus Infections Following Childbirth and Abortion: I. Determination of Virulence of Group A Strains. Hildred M. Butler and A. M. Hill.—p. 222.
*Pooled Adult Serum in Prophylaxis of Measles. Hilda W. Bull.—p. 228.

**Hemolytic Streptococcus Infections Following Childbirth and Abortion.**—From the study of 101 group A strains causing puerperal or abortal infection Butler and Hill were able to establish a relationship between certain properties of the strains and severity of infection. The demonstration of capsules in young cultures indicated that in general capsulated strains gave rise to severe invasive infections, while the noncapsulated varieties were associated with the mild cases. This correlation was in agreement with the ability of the strains to resist phagocytosis in freshly defibrinated human blood. The capsulated organisms were usually resistant to phagocytosis and were able to multiply in such blood, whereas the noncapsulated strains were readily taken up by the leukocytes. The results obtained show that in the 101 group A strains the capsulated strains were possessed of far greater capacity to invade the tissues and to set up an acute generalized infection than were the noncapsulated organisms. Of twenty-two such strains from blood cultures twenty-one were capsulated in young cultures. This observation agrees with the experience of Dawson and Olmstead (1934) that acute and fulminating infections were due to capsulated strains. White, Rudd and Ward (1939), from a study of scarlet fever, believed that capsulated strains showed a greater degree of infectivity, but they did not believe that noncapsulated organisms were less virulent than the capsulated strains once the tissues were infected. Butler and Hill state that their results suggest that in puerperal sepsis the capsulated strains are far more virulent than the noncapsulated strains. The noncapsulated strains, although capable of infecting the tissues, lack sufficient virulence to cause severe or fatal infections. The examination of group A strains for the presence of capsules in young cultures, either alone or in conjunction with observations on resistance to phagocytosis and colony form, should usually enable one to predict the probable severity of a puerperal infection within twenty-four hours of taking the vaginal swab.

**Pooled Adult Serum in Prophylaxis of Measles.**—According to Bull, when measles broke out in Melbourne after an absence of three years adult pooled serum was offered to all young exposed children as prophylaxis. The usual dose was 15 cc., but it varied from 10 to 20 cc. according to the age and condition of the patient. Treatment was given to 238 children between 1 and 4 years of age who had been exposed to the infection of an adult member of the family, and about 100 children received treatment in institutions. Of the 258 children treated, sixty-seven escaped the disease, 151 had it in the attenuated form with no prodromal sickness and no complications, thirty-seven had moderate attacks and only three had severe attacks, one with slight bronchopneumonia. More than 10 per cent of the untreated children less than 6 years of age in the rest of the population had severe complications, mostly bronchopneumonia requiring hospital treatment, and two died.

## South African Medical Journal, Cape Town

**14:45-64 (Feb. 10) 1940**

Caseous Hydatid Cysts: Two Cases. F. H. Kooy.—p. 47.
Small Epidemic of Infective Polyneuritis. W. K. Blackie and D. M. Blair.—p. 49.

## Chinese Medical Journal, Peiping

**54:501-600 (Dec.) 1939**

Liver Degeneration Following Neoarsphenamine and Mapharsen Treatment. I. Snapper, K. Y. Chin and S. H. Liu.—p. 501.
Immunity to Infection with Leishmania Canis of Hamsters Recently Cured of Leishmania Donovani Infection. H. L. Chung and C. W. Wang.—p. 519.
Intramuscular Administration of Sulfapyridine (Dagenan) and Its Use in Treatment of Lobar Pneumonia. F. T. Kao and C. H. Ho.—p. 523.
Control of Scarlet Fever: Part II. Active and Passive Immunization Against Scarlet Fever. P. L. Pan.—p. 532.
Helminth Parasites of Rats in Kweiyang. T. H. Chin.—p. 548.

## Presse Médicale, Paris

**68**:121-160 (Feb. 6) 1940. **Partial Index**

Early Detection of Pulmonary Tuberculosis and Its Medicosocial Importance. C. Fraga.—p. 121.
Aphasia and Left Parietal Lobe. A. Austregesilo.—p. 126.
Chromoblastomycosis. O. da Fonseca.—p. 133.
Adrenal Insufficiency. Ameco-Diaz.—p. 139.
*Achalasia of Pylorus in Adults. A. C. Netto.—p. 148.

**Achalasia of Pylorus in Adults.**—Netto presents four cases of pyloric achalasia, the ages of the patients ranging between 14 and 25 years, in which Finney's operation was successfully performed. Two of the patients had a mega-esophagus, one a megacolon. The symptoms consisted of dyspepsia, a sense of fulness after meals, acidity, eructations, nausea, vomiting and hyperperistalsis in the epigastric region. Stenosis of the pylorus was not evident in the roentgenograms. On surgical intervention only an abnormal thickening in the prepyloric antrum, due to hyperplasia of the muscle wall, was observed. According to the author, prepyloric achalasia is identical with hypertrophic stenosis of the newborn except for the absence of the tumor. This absence in adults is attributed to a generalized and uniform tissue hypertrophy. Microscopic examinations of resected portions show a pronounced cell loss in the Auerbach-Meissner plexus, replaced by fine fibrous tissue. However, no typical characteristics of degeneration of nerve trunk or ganglionic cells are noted. The disease is ascribed to chronic vitamin $B_1$ deficiency involving defective myelinization of the vagus nerve with the consequent predominance of the sympathetic nerve system and entailing a dysfunction of the sphincter. The author does not believe that the disease is due to spasms but regards it as a functional stenosis caused by the disturbance of the pyloric reflex. He thinks that the disease in adults is infrequent only for diagnosticians who seek the identical clinical picture that is found in the newborn. He therefore recommends a thorough diagnosis before surgical intervention.

## Revue de Chirurgie, Paris

**58**:625-712 (Nov.-Dec.) 1939

General Principles of Treatment of Fresh Cranio-Encephalic Wounds Caused by War Projectiles. J. Ducuing, J. d'Harcourt, A. Giño and A. Folch.—p. 625.
*Closed Method in War Surgery. J. d'Harcourt, A. Folch Pi and A. Oriol Anguera.—p. 645.
Can the Condemnation of the Amputation of Chopart be Revised? A. Guihal and J. Ginestié.—p. 673.
Regional Ileitis. J. Meyer-May and T. T. Tung.—p. 692.

**Closed Method in War Surgery.**—D'Harcourt and his associates direct attention to Orr's closed method of treatment of chronic osteomyelitis. Orr advises saucerization and packing of the cavity with sterile petrolatum strips and immobilization of the extremity with a plaster of paris cast to include the two adjoining articulations. The method has two disadvantages: the offensive odor and the aversion which this technic contrary to the general surgical habits raises among practitioners. For a number of years Orr's method had been used successfully in chronic osteomyelitis. In 1934 it was first applied in war fractures. The patients were those who had been injured more than ten days before and who had been treated previously with the customary method of immobilization and local antisepsis. The results were surprisingly favorable. During the Spanish war, from 1936 to 1939, the authors treated 7,500 wounded with fractures and followed up about 17,000 treated in other centers. The closed treatment has been extended to injuries of the soft parts of the extremities with great loss of tissue. The method considerably shortens the time required for the cure of the wound especially during the initial phase. It permits of the application of conservative measures for injuries of the extremities and it reduces the number of amputations. The rigorous immobilization of the wound assures a more rapid epithelization and avoids pseudarthroses and poor position of the fragments so often observed in large compound, infected fractures. It avoids the painful daily dressings, the mobilization and the absorption of the products of disintegration which take place in the course of mechanical manipulations. It prevents secondary infections so readily produced in the course of antiseptic lavages. The antiseptic proteolysis is absent and cicatrization of lesions is not interfered with by antiseptics, which although bacteriotropic are destructive to fresh granulations. The lavage destroys the biologic products which activate the process of cicatrization. The dehydration by evaporation in these large wounds is considerably diminished. This constitutes an extremely important factor in the local reparative processes and in the dynamics of the organism.

## Revue de Laryngologie, Bordeaux

**61**:1-60 (Jan.) 1940

Blocking of Endolymphatic Sac and Portmann's Operation. J. Waltner.—p. 1.
*Effect of Vitamins on Otosclerosis. M. Baer.—p. 33.

**Vitamin Therapy in Otosclerosis.**—Baer reports the negative results obtained in fifteen cases of otosclerosis with a combined vitamin $B_1$ and vitamin C therapy aiming at vitamin C saturation. Preliminary tests for vitamin C deficiency were made. A general vitamin C deficiency varying between 600 and 1,500 mg. was found. Vitamin treatment was preceded by air insufflation, ear massage and diathermy lasting for weeks and followed by the peroral use of vitamins $B_1$ and B and by simultaneous intravenous injections of vitamin C (once or twice a week), both vitamins being administered for from two to three months. Though no improvement in hearing was achieved, secondary ameliorations such as the cure of headache and cessation of noises in the ear were noted. Tinnitus aurium was less responsive. The author admits the possibility of interaction of other factors besides vitamins in the ameliorations obtained, believes that a satisfactory systemic vitamin C supply is compatible with a localized vitamin C deficiency and a consequent vascular involvement, and recommends the further investigation of the value of the vitamins for otosclerosis.

## Schweizerische medizinische Wochenschrift, Basel

**70**:157-180 (Feb. 24) 1940. **Partial Index**

Hypophysial Disturbances. W. Berblinger.—p. 157.
System of the B Vitamins. H. Willstaedt.—p. 159.
Retinitis Pigmentosa and Hypophysis. H. Zondek and Gerda Wolfsohn.—p. 162.
Neurovegetative Hemoptysis. A. Hernández Diaz.—p. 163.
*Treatment of Neuro-Anemic Syndrome in Pernicious Anemia by Vitamin $B_1$ (Aneurin). F. Sciclounoff and M. Naville.—p. 166.

**Vitamin $B_1$ in Neuro-Anemic Syndrome of Pernicious Anemia.**—According to Sciclounoff and Naville, the cure of pernicious anemia is not always accompanied by the disappearance of the neurologic complications. They administered thiamin chloride to thirteen patients with the neuro-anemic syndrome of pernicious anemia. In the majority of the cases the erythrocytes had reached values of 5 million and up and yet the neurologic symptoms had not been ameliorated. The results obtained by the authors indicate that vitamin $B_1$ can ameliorate and often cure the neurologic disturbances. However, the therapeutic effects are not in proportion to the gravity of the clinical symptoms; besides grave cases, which are completely and quickly improved, there are cases with mild clinical symptoms which are only slightly improved or which are completely refractory. The favorable effects become manifest by improvement in the motility and the sensitivity. The painful paresthesias often cease completely and quickly. The abolished reflexes may reappear. In eight of the thirteen cases the results were favorable, in five the treatment failed. The daily doses varied between 4 and 10 mg. The duration of the treatment was usually around three weeks, although the patients were often improved after the first week.

## Revista Médica de Rosario, Rosario de Sante Fe

**30**:1-140 (Jan.) 1940. **Partial Index**

*Sulfanilamide in Otitis Media. D. R. Imhoff.—p. 28.
Prolonged Protamine Zinc Insulin Treatment of Diabetes Mellitus. O. Vila.—p. 71.

**Sulfanilamide in Otitis Media.**—Imhoff administered sulfanilamide to eight children suffering from acute suppurative otitis media complicated by unilateral or bilateral mastoiditis. The patients were about to be operated on because treatment with vaccines, stock vaccines, proteins and shock methods had failed and the x-ray examinations indicated the existence of a mastoiditis. Neither the dose nor the duration of the treatment

is specified. The earache and the pain over the mastoid, the headache and fever diminished early in the course of treatment and disappeared in from ten to twenty days. Discharge from the ear diminished early and stopped altogether in from twenty to thirty days. Otoscopic examination performed before and after administration of sulfanilamide demonstrated the disappearance of the local edema, congestion and infiltration of the tympanitic membrane and healing of the perforation of the membrane. Normal hearing returned in all of the cases. The author believes that this treatment is indicated in acute cases in which operation is indicated but not in the presence of fulminant general and local symptoms which call for an emergency operation.

## Archiv f. exper. Pathologie u. Pharmakologie, Berlin

**194**:1-132 (Dec. 14) 1939. **Partial Index**

So-Called Sulfhemoglobin. F. Jung.—p. 16.
Significance of Cardiac Blood Vessels for Regulation of Blood Pressure. T. Gotsev.—p. 31.
Decomposition of Oxytocin and Vasopressin in Vitro. Mathilde Christlieb.—p. 44.
Changes in Glycogen Content of Heart as Sign of Cumulative Effect of Digitalis. F. Hahn.—p. 62.
Significance of Connection Hypophysis-Diencephalon for Elimination of Melanophoric Hormone Following Administration of Porphyrin. W. Rodewald.—p. 74.
*Estrogenic Action of Porphyrins. W. Rodewald.—p. 76.
Chemical Stimulation of Cells on Fibroblastic Cultures. W. Heubner and Emma Schreiber.—p. 78.

**Estrogenic Action of Porphyrins.**—Rodewald pointed out in earlier reports that injection of porphyrins (hemoporphyrin and protoporphyrin) stimulated the hypophysial secretion of melanophoric and gonadotropic hormones. Studies undertaken to determine whether porphyrin influences other parts of the incretory system demonstrated that the injection of porphyrin into castrated mice elicits estrus. From a series of experiments on castrated mice, with injection of protoporphyrin and hematoporphyrin, the author concludes that estrus can be elicited in castrated female mice by means of porphyrins. When large doses were given it was observed that the estrus persisted even after the injections of porphyrin were discontinued. The author suggests that the estrogenic action is probably not exerted by the porphyrin itself but that porphyrin activates an estrogenic substance in the organism.

## Archiv für klinische Chirurgie, Berlin

**197**:511-898 (Jan. 3) 1940. **Partial Index**

Diaphragmatic Fractures. F. Jaeger.—p. 511.
*Perforated Gastric Ulcer. F. Jaeger.—p. 558.
Innervation of Sweat Glands and Significance of Peripheral Sympathetic Cell Network. F. Schörcher.—p. 614.
Medial Fractures of Neck of Femur by Muscular Traction and Their Prevention During Metrazol Therapy of Schizophrenia. V. Struppler.—p. 628.
Suppuration of Knee Joint. G. Maurer.—p. 639.
Traumatic Changes on Head of Radius. H. Ehlert.—p. 648.
*Treatment of Burns at Surgical Clinic in Munich. G. Pöhlmann.—p. 666.
Suggestion for Applying Lateral Traction in Treatment of Fracture. K. Stühinger.—p. 731.
Nutritional Treatment of Surgical Tuberculosis. A. Siller.—p. 735.
*Experiences with Chronic Subdural Hematoma. F. Jaeger and U. Handfest.—p. 742.
Treatment of Gunshot Injury with Missile Remaining in Brain. V. Struppler.—p. 758.

**Perforated Gastric Ulcer.**—According to Jaeger the incidence of perforated gastric ulcer has been greater at the surgical university clinic in Munich than in other surgical clinics, 320 cases having been treated during the years 1921-1938 inclusive. The higher incidence during the last six of the eighteen years confirms reports from other countries, which indicate a rapid increase in gastric and duodenal perforations during the last two decades. The more frequent recognition by improved diagnostic methods might account for the increase. The comparatively higher incidence of gastric perforations in the Munich region is probably due to meteorologic and dietetic factors. Jaeger emphasizes the importance of highly seasoned foods and of alcohol. Simple suture of the perforation gives satisfactory results in many cases. Resection is done later in some of these cases. The mortality rate depends mainly on the time that elapses between perforation and operation. The quantity and condition of the escaping gastric contents are of importance. The author believes that trauma of the type caused by heavy lifting and abnormal increase in the abdominal pressure cannot cause a perforation. In the case of a direct trauma to the abdominal wall, perforation of an ulcer is possible the same as injury to the intestine. The mobility of the stomach and the intestine or their fixation by adhesions, as well as fulness of the stomach at the time of the trauma, play a part. If perforation of the ulcer becomes manifest immediately after a trauma, it must be regarded as a contributing factor. Simple suturing is the simplest and least dangerous operation for the treatment of perforation. However, in view of the fact that a small percentage of the patients treated by simple suture are subject to recurrence, the author feels that in young persons with large callous ulcers, whose general condition is favorable, resection should be done immediately. If the general condition does not justify an immediate resection, a simple suture should be practical. Such patients must be kept under observation so that a secondary operation, when necessary, can be done at the most opportune time. Seventy per cent of the ulcers closed by suture remained cured.

**Treatment of Burns.**—Pöhlmann states that in arriving at the cause of death from burns it is necessary to differentiate between the deaths taking place within the first six hours, those taking place from six to forty-eight hours after, and the late deaths which occur after the forty-eight hour period. He thinks that shock can be held responsible only for the early deaths, whereas all later deaths must be ascribed to changes in various organs and to the absorption of toxic substances. Measures must be instituted to counteract the pain and the shock, to increase the circulating quantity of the blood, to combat the deficiency in sodium and chloride and to support the elimination of toxic substances. Pöhlmann believes that tannic acid treatment meets all the requirements of a good method in that it prevents absorption, alleviates the pain, exerts an antiseptic action, prevents loss of plasma and insures undisturbed cure. He employed the method of "brushing" in eighteen of the fifty-nine cases. Tannic acid treatment is to be preferred in the extensive but not deep burns and in the presence of multilocular burns, whereas brushing is recommended in the burns that cover small areas, particularly if they go comparatively deep. Exceptions are deep injuries, which, as a result of their peculiar localization, provide unfavorable anatomic conditions for brushing. In twenty-seven cases the author applied silver foil after the removal of blisters and shreds of epidermis. The method can be employed with or without brushing. In shallow burns of the second degree the silver-foil treatment, without previous brushing, is excellent. In deep burns of the second degree, however, silver-foil treatment did not prove as satisfactory without previous brushing. In deep burns of the second degree and in third degree burns it is advisable to combine the silver-foil treatment with brushing. The application of ointments and powders was found to be unsatisfactory. It has been recognized recently that the protoplasmic shock is of great importance and that the increased permeability of the capillaries can be corrected by the administration of adrenal cortex extract and of vitamin C.

**Chronic Subdural Hematoma.**—Jaeger and Handfest state that the description of the symptomatology of subdural hematoma by Cushing has never been surpassed. Diagnosis of subdural hematoma should be considered whenever severe headaches and a state of confusion develop in persons who have sustained a cranial trauma. The authors report fourteen cases in which operation was performed at their clinic in the course of the last two years. All of the patients recovered and regained their working capacity. The authors believe that the concepts of commotio, contusio and compressio cerebri are not adequate as a basis for the diagnosis and therapy of traumatic intracranial hemorrhage. Aside from the fact that these conditions may exist simultaneously or follow one another, they become complicated by edema, swelling and shock. The classic picture of commotio cerebri caused by rupture of the median meningeal artery is encountered rarely. An exact diagnosis of craniocerebral injuries requires careful neurologic examination, roentgenoscopy, observation of the pulse, the blood pressure, respiration and temperature, spinal puncture and examination of the cerebrospinal fluid. In obscure cases exploratory trephining

should be resorted to more often than it has been. In addition to clarifying the diagnosis, trephining offers therapeutic possibilities. The subdural hematomas can frequently be suctioned off and flushed through the trephine opening. Suctioning off is the method of choice in the chronic cases of subdural hematoma.

## Klinische Wochenschrift, Berlin

**19**:49-72 (Jan. 20) 1940

Adrenal Glands and Pregnancy. R. Elert.—p. 49.
Excretion of Porphyrin in Dermatoses. C. Carrié.—p. 54.
Fat Reabsorption Dysfunction: Case. F. Heni.—p. 56.
*Blood Serum Sedimentation Test for Carcinoma. K. Ko.—p. 60.

**Blood Serum Sedimentation Test for Carcinoma.**—Ko applied Serény's method of measuring the reaction of heat-coagulated blood serum to sodium hydroxide, after elimination of the erythrocytes, to 150 persons. Ten were healthy controls and 140 presented various diseases, including twelve cases of gastric and duodenal ulcers and seventeen cases of carcinoma. The author's special interest was the efficacy of this method in detecting early carcinoma. The results for the controls were found to lie within the borderline values set up for this method. The author's investigations showed that blood serum sedimentation was accelerated in gastric and duodenal ulcers after severe hemorrhage, in carcinomas with cachexia (eight cases), in grave pneumonias, in nephrosis and in cardiac decompensation. In nearly all these cases a diminution in the albumin content of the blood serum and in the albumin-globulin quotient could be noted. Further tests with distilled water dilutions showed a close connection between blood serum sedimentation and blood serum albumin. No definite parallelism was found, for the most part, between the blood serum sedimentation reaction and the erythrocyte sedimentation rate. In certain diseases acceleration was observed in both sedimentation tests; contradictory results were obtained in others. The author concludes that repeated tests are required to distinguish diagnostically between gastric ulcers and gastric carcinomas, tests conditioned on the subsequent behavior of the initial acceleration, which in turn depends on the diminution of the albumin content of the blood serum. Hence the blood serum sedimentation method can hardly be counted on as a helpful procedure in the early diagnosis of malignant tumors.

**19**:73-96 (Jan. 27) 1940

Reactions of Peripheral Circulation in Man. F. Gross, K. Matthes and H. Göpfert.—p. 73.
Pulmonary Changes Due to Metrazol Shock. A. Jarisch and H. Thoma.—p. 76.
*Morphologic Lesions of Liver and Kidney and Hepatorenal Insufficiency After Burns. K. H. Zinck.—p. 78.
Vitamin C Deficiency Caused by Exclusive Meat Diet: Case. W. Rudolph.—p. 84.
Origin and Clinical Significance of Impure First Heart Sounds. H. Koizumi.—p. 85.

**Hepatorenal Insufficiency After Burns.**—Zinck selects a number of cases in which cutaneous burns ranged from 20 to 90 per cent of the entire surface of the skin and deaths occurred between seven hours and twenty-six days subsequently, in order to present his conclusions on the damage done by extensive burns to the liver and kidney and on the ensuing hepatorenal insufficiency. He found morphologic evidence of capillary insufficiency after a few hours and a more or less pronounced and extensive necrosis in the central and intermediate portions of the liver as the result of intoxication caused by the disintegration of the albumin. Especially in children he noted dissociation, brown atrophy and incipient striated degeneration of the parenchyma. Kidney lesions were less marked and affected the glomeruli and the tubules. The pathology of the glomeruli was characterized by interstitial edema and albumin exudates. Hypochloremic calcifications leading to sclerosis were noted. The author stresses the pathologic-anatomic significance of extensive body burns, admits the difficulty of judging the metabolic implications of morphologic changes in the organs and suggests the further study of such changes in connection with the question of the residual nitrogen. The absence of icterus from the clinical picture may be explained as due either to early death which prevents the biliary alteration affecting the skin or to the damage done to the gallbladder and the reticulo-endothelial system at the outset.

## Zeitschrift für Hygiene und Infektionskr., Berlin

**122**:249-376 (Dec. 21) 1939. Partial Index

Antagonistic Action of Bacillus Coli Against Dysentery Bacilli. R. Maner.—p. 249.
Reactivity of Disinfectants Containing Chloride Against Substrates Containing Nitrogen with Special Consideration of Azochloramide. R. W. Vierthaler and H. Gebauer.—p. 281.
Interferometric Studies on Drinking Water. B. Schmidt.—p. 290.
Transformation of Flat Form of Kruse-Sonne Bacteria into Round Form. K. Roelcke and W. Bartram.—p. 295.
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Studies on Allergy: II. Relations Between Experimental Bronchial Asthma and Weather. R. Preuner.—p. 320.
*Increase of Tularemia in Central Europe. H. J. Jusatz.—p. 352.

**Increase of Tularemia in Central Europe.**—According to Jusatz, tularemia in human subjects has been observed in Europe in the course of the last fifteen years. It is limited to certain regions which by virtue of their topography serve as reservoirs of tularemic infection. In eastern Europe the most important carriers of tularemia seem to be the water rats and in northern Europe the lemmings. From these animals the causal organism is transmitted to other rodents. In central and southeastern Europe, hares and wild rabbits and possibly muskrats are the carriers of the bacillus of tularemia. The origin of the present tularemia infection in these types of rodents is still unknown. The majority of epidemics of tularemia in human subjects have developed following a great increase in the rodents and the accompanying increase in deaths among these rodents. A few isolated cases of tularemia often precede the onset of an epidemic in a region by one or two years. The danger of an epidemic must be regarded as increased when the transmission from diseased rodents to man can be facilitated by an intermediate carrier, an insect. The limitation of tularemia to a few regions in Europe seems to be explained by certain geomedical conditions. All human epidemics of tularemia that have occurred so far in Europe have been localized in regions with an annual precipitation of less than 1,000 mm. (39 inches), that is, in comparatively dry regions. Furthermore the tularemia epidemics have developed chiefly in or near regions the physical character of which is favorable for the development of certain rodents, as for instance the Russosiberian steppes, the grass steppes of Thrace and the elevated plains of Scandinavia or in regions which still have remnants of the vegetation that is characteristic for steppes (Moravia). The author concludes that, in regions in which these prerequisites exist, epidemics of tularemia are possible but that in regions with high precipitation rates such epidemics do not have to be feared.

## Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

**84**:681-788 (Feb. 24) 1940. Partial Index

Injuries of Middle and Internal Ear by Carelessness. A. P. H. A. de Kleyn.—p. 682.
Premature Detachment of Placenta with Anuria. J. Groen and G. A. Lindeboom.—p. 688.
*Indications for Intravenous Strophanthin Therapy. L. M. ter Horst.—p. 697.
Influence of Virulence and Origin of Vaccine Virus. J. D. Verlinde.—p. 702.

**Indications for Intravenous Strophanthin Therapy.**—Intravenous strophanthin therapy, according to ter Horst, is indicated not so much by definite heart disease or by the degree of insufficiency but rather by the character of cardiac action as determined by disproportion between dilatation and hypertrophy of the left ventricle. In all disorders in which there is a dilated left ventricle and an inadequate hypertrophy, that is in conditions in which digitalis is generally ineffective, the intravenous administration of strophanthin is effective. Horst employed strophanthin in a number of cases. The disproportion between dilatation and hypertrophy of the left ventricle can be demonstrated by roentgenologic and electrocardiographic studies. The quantity of strophanthin injected daily varies between 0.2 and 0.3 mg. (and in exceptional cases 0.35 mg.). It is advisable to begin with 0.2 or 0.25 mg. and, if necessary, increase this dose. After three or four days the treatment is interrupted for one day. Before the strophanthin therapy is begun, it is necessary to ascertain that the patient is not under the influence of digitalis. After improvement has been obtained, the treatment can be continued by the oral administration of digitalis.

## Acta Tuberculosea Scandinavica, Copenhagen

14:1-198 (Nos. 1-2) 1940

Tuberculosis and Constitution. A. Kristenson.—p. 1.
Comparison Between Citrate Sedimentation Reaction and Heparin Sedimentation Reaction in Pulmonary Tuberculosis. K. A. Vannfalt.—p. 37.
Clinical Tuberculosis and Tuberculin Reactions Among Students in Uppsala. H. Sjövall.—p. 100.
Frequency of Bovine Infection Among Tuberculous Patients in Denmark. K. A. Jensen, V. Lester and K. Tolderlund.—p. 125.
*Erythema Nodosum and Intrathoracic Tuberculosis. G. L. Ingebrigtsen. —p. 138.
*Sulfapyridine Treatment in Experimental Tuberculosis. K. E. Birkhaug. —p. 180.

**Erythema Nodosum and Intrathoracic Tuberculosis.**—Ingebrigtsen states that most investigators in the Scandinavian countries are of the opinion that a close relationship exists between erythema nodosum and tuberculosis. Observations formerly regarded as an argument against the tuberculous genesis have been explained in a manner so that they no longer contradict the theory of a relationship between erythema nodosum and tuberculosis. The epidemic occurrence of erythema nodosum has, in a number of cases, been traced to a tuberculous source of infection. Relapses of erythema nodosum and its occurrence after acute infectious diseases have lost their force as an argument against the tuberculous genesis since Wallgren formulated the theory of a "postprimary erythema nodosum," according to which erythema may develop during fluctuations in the allergy of a person already infected with tuberculosis at the time when a temporary anergy is again replaced by allergy. The anergy may be traceable to any of a number of infections, while it can be observed that erythema nodosum develops during convalescence, when the tuberculous allergy returns. Nearly all investigators, however, admit that nontuberculous forms of erythema nodosum actually occur. In order to investigate the relationship between erythema nodosum and intrathoracic tuberculosis, the author studied approximately 9,000 dismissal records of a tuberculosis sanatorium in northern Norway. In 417 the history disclosed erythema nodosum. Since the author is concerned chiefly with the patients in whom erythema nodosum was the first symptom of tuberculosis, he disregards three cases in which the tuberculin reaction was negative, thirteen in which a tuberculous process existed previous to the erythema nodosum and six in which it was not known at what age erythema nodosum developed. In fifteen of the remaining 395 cases intrathoracic tuberculosis could not be demonstrated but in the remaining 380 there was an active intrathoracic tuberculosis. An analysis of the cases in which erythema nodosum was the first symptom of intrathoracic tuberculosis corroborated its predominance in women, for 83 per cent of the patients were of the female sex. The majority of the patients (five eighths) were of the age group between 15 and 25. The records of 240 of the patients indicated the months in which the erythema nodosum became manifest. These records indicated seasonal fluctuations with peaks for December and May and with the lowest figures during the autumn. The curve of the seasonal fluctuations of erythema nodosum resembles the curve for pleurisy, for the onset of any death from tuberculosis and for tuberculous meningitis. The seasonal fluctuations of the author's material (northern Norway) were greater than in a comparative material from southern Norway. Erythema nodosum during childhood is less often followed by pulmonary tuberculosis than is erythema nodosum in adults. Two thirds of 190 cases of phthisis developed in the course of the first three years after the erythema nodosum.

**Sulfapyridine Treatment in Experimental Tuberculosis.**—According to Birkhaug, chemotherapy of tuberculosis is handicapped by the formation of fibrotic and avascular tissue about the ulcerations, abscesses and cavities, because circulating antibacterial drugs are incapable of penetrating such dense and avascular tissues. Nevertheless the great therapeutic successes obtained with the sulfanilamide compounds in various bacterial infections led to experiments with these compounds in tuberculosis. The author reviews earlier investigations by Rich and Follis and his own experiments with a soluble azosulfamide. Studies in vitro on various sulfanilamide preparations disclosed the superior antimycobacterial properties of sulfapyridine. This compound was consequently administered to ninety-six guinea pigs infected with tubercle bacilli. Hematologic, bacteriologic and pathologic observations demonstrated that the daily oral administration of from 300 to 600 mg. of sulfapyridine per kilogram of body weight produced a significant retarding influence on the development and progress of tuberculosis induced in guinea pigs with relatively large doses of human tubercle bacilli. The antimycobacterial effect seems to be directly proportional to the administered dose and to the concentration of the sulfapyridine in the blood and body fluids. However, neither the virulence nor the tuberculinogenic action of tubercle bacilli is altered by the prolonged action of sulfapyridine in vitro or in vivo. This partial chemotherapeutic success in highly susceptible guinea pigs suggests that sulfapyridine might be helpful in miliary forms of tuberculosis and in tuberculous meningitis by restricting or preventing fresh dissemination of tubercle bacilli. In chronic forms of the disease the treatment seems doomed to fall short of the ultimate goal.

## Nordisk Medicin, Gothenburg

8:1-40 (Jan. 6) 1940. Partial Index

### Norsk Magasin for Lægevidenskapen

Two Cases of Low Vaginal Atresia. T. Dahle.—p. 9.
*Spondylitis Ankylopoietica. E. Buchmann.—p. 12.

**Spondylitis Ankylopoietica.**—Buchmann says that, of 200 patients with this disorder in London examined and followed by him, many were men aged from 18 to 25 who had been active in athletics. The etiology of spondylitis ankylopoietica is unknown, but it is probably infectious. He calls attention to the general prespondylitic symptoms. Change in the sacroiliac joints always occurs first, often long before other clinically demonstrable symptoms from the back, as has been roentgenologically established in more than 400 cases; bilateral sacro-ilitis is pathognomonic for the disorder (Scott). In the prespondylitic stage there is reduced calcium content around the sacro-iliac joint, the fissure seems wider, the contour is somewhat blurred, and small round clarifications are often seen. The prespondylitic symptoms usually appear at the age of from 12 to 18, may last from weeks to months and are intermittent, with free periods of from half a year to a year. The pain is often variable in character and localization. Gradually general symptoms set in: sleeplessness, loss of weight and anemia. The sedimentation reaction is increased. There are periods of fever. In about 10 per cent of the cases there is iritis. Then the localized symptoms develop. In the early stages diagnosis is difficult or impossible except by x-ray examination. Tuberculosis of the sacro-iliac joint has a shorter course, is generally unilateral, often with localized pain over the joint, and may give abscess formation. The prognosis in spondylitis ankylopoietica is unfavorable because of the tendency to progression. The disease is not fatal in itself, but death often results from pulmonary complications. The author considers Scott's wide field roentgen treatment the most successful both during the early stage and as a palliative treatment in the late chronic stage.

### Hygiea

Mild Chronic Encephalitis. E. Rydén.—p. 25.
*Rupture of Gallbladder with Fatal Intraperitoneal Hemorrhage. E. Eriksson.—p. 30.
Attempt at Explanation of Roentgen Picture in Acute and Subacute Bone Atrophy: Preliminary Report. G.-A. Landolf.—p. 33.

**Rupture of Gallbladder with Fatal Intraperitoneal Hemorrhage.**—Eriksson cites the three cases reported to date in which a fatal intraperitoneal hemorrhage or one menacing life originated from infarction and rupture of the gallbladder. In two cases there was cholelithiasis. The third instance resembles his own case, which is described in detail. Disease of the pancreas together with cholelithiasis seemed probable. Aggravation occurred apparently in connection with a unilateral pulmonary complication. Rapid aggravation, interpreted as a further complication from a heart insufficiency, dominated the final picture. The absence of more marked symptoms of progressive internal hemorrhage is ascribed to the abundant administration of fluids and stimulation during the course. There were no clinical symptoms such as usually indicate active therapy.